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NUCLEAR STRATEGY IN THE NINETIES:

DETERRENCE, DEFENCE, AND DISARMAMENT

EDITED BY ALEX MORRISON

THE CANADIAN INSTITUTE OF STRATEGIC STUDIES

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THE CANADIAN INSTITUTE OF STRATEGIC STUDIES

President, George G. Bell, OC, MBE, CD, PH D
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ALEX MORRISON

EDITOR'S NOTE

The subject of this spring 1989 seminar of The Canadian Institute of Strategic Studies, 'Nuclear Strategy in the 1990s: Deterrence, Defence, and Disarmament,' is one which could have been discussed with great profit for more than one day. That so much was accomplished in such a short period of time is a tribute not only to those who presented papers but also to the members of the audience and their insightful, oft-times probing, questions.

Each of the terms in the title has been, and is, the subject of much contradictory debate and no little misunderstanding. Unfortunately, experience has shown that many approach these matters with a mind-set that allows little or no room for understanding of alternative definitions, strategies, or considerations. It is the hope of the CISS that the papers in this volume, together with the questions, answers and summary will convince adherents of all persuasions that there is much to be gained from a close examination of nuclear strategy.

The Federal Budget of April past and the consequences of the decisions announced in that document will have a great, and grave, impact on the foreign and national security policies of Canada for many years. That the decision was taken to reduce expenditures on foreign aid and defence solely on financial grounds (and without extensive consultation within the government or in the departments most directly affected) is a cause for regret. Further sadness is incurred when it is realized that base closures were announced without any notice having been given to the communities involved and, most regrettably, without any alternative plans to deal with the upheaval and the resulting unemployment. The gap between government promise and government performance is wide and deep indeed.

All of which serves to illustrate the valid point that Canadians and our leaders must be well informed on matters of vital concern. This is the mandate of the CISS and one that we will continue to fulfill in many ways, one of which is our twice yearly seminars. The autumn seminar is devoted to The Canadian Strategic Forecast while the subject of the spring meeting changes annually. Our publications, public information activities, research projects and international exchange relationships all combine to produce a wealth of information on strategic and national security matters.

I look forward to guiding the affairs of The Canadian Institute of Strategic Studies and to working with all who share our wish to be better informed.

Alex Morrison
Executive Director

INTRODUCTORY REMARKS

Dr George Bell, President, Canadian Institute of Strategic Studies

Good morning, ladies and gentlemen. For those of you who do not already know, Brian MacDonald, our Executive Director, resigned as of March 31 in order to pursue further his academic activities.

Alex Morrison, currently Minister-Counsellor at the Permanent Mission of Canada to the United Nations, will be our new Executive-Director as of June 1, the date of his retirement from over 32 years of military and diplomatic service. I am happy that he is here with us today. We are pleased to have him join us at the Canadian Institute of Strategic Studies as he has had a long experience in the Departments of Defence and External Affairs, particularly this last six years in New York where he has been very much involved in the work of the Canadian mission in the fields of arms control, disarmament, peacekeeping and all matters of national and international security. He brings to us a depth of experience, a wide network of contacts, and his personal dedication to strengthening the Institute.

General Robert Larose, Chairman

I would like to call on Donald Macnamara to give a brief introduction to the seminar.

Brigadier General Donald Macnamara

Good morning, ladies and gentlemen. It is my pleasure to welcome you to the first of our semi-annual seminars for 1989; our topic today is Nuclear Strategy for the 1990s: Deterrence, Defence and Disarmament.

We live in interesting times. As we gather here a few weeks after the 40th birthday of the North Atlantic Treaty Organization, we have to acknowledge that much is changing — in the world, within the Alliance, and indeed, in Canada.

Some would argue that Mr Gorbachev has achieved in three years of publicly astute conciliatory discussion what his predecessors had been unable to do in over 30 years of militancy. Now NATO is in some disagreement, both within its Councils and between its governments and their publics, about the nature and size of the Soviet threat and the Alliance's response to it. Some argue that such disagreement simply demonstrates the healthy democratic nature of the Alliance, within which both public and political consensus can be achieved.

Our seminar today is really part of that process. Since the acceptance of the Harmel Report in December, 1967, and the coincident adoption of the strategic concept of flexible response, the grand strategy of NATO could be summed up neatly in the three words that we are addressing today: deterrence, defence and disarmament. Flexible response, as you know, assumes that 'NATO should be able to deter, and if necessary, counter military aggression of varying scales in any region of the NATO area, to meet any aggression by direct defence at a level judged to be appropriate to defeat the attack, and to be prepared to escalate the level deliberately, maintaining full political control, if defence at the level first selected is not effective.' In other words, a conventional attack would be met with a conventional response, but should the conditions deteriorate, there could be escalation to the use of theatre nuclear weapons and, if necessary, strategic nuclear weapons. Quoting again, 'An aggressor must be convinced of NATO's readiness to use nuclear weapons if necessary, but he must be uncertain regarding the timing or the circumstances in which they would be used.'

Since the Intermediate Nuclear Forces Agreement of December 1987, we have been watching the removal and destruction of those Soviet missiles that caused so much concern during the late 1970s and early 1980s. (Left out of this agreement, of course, were the short-range nuclear forces, the modernization of which is the subject of much discussion right now.) Overlying all of this is the growing realization and acceptance of the view that nuclear weapons have only a deterrent function as opposed to a military function. On the other hand, technological advances have given conventional weapons and warheads target-destruction capabilities formerly achievable only with tactical nuclear weapons. The roles of chemical and biological weapons, as we are reminded by the experience in Iran and Iraq, also cannot be ignored in the equation.

Part and parcel of the interesting changes, of course, is the new and hopeful climate for arms control and disarmament agreements, both nuclear and conventional. For Canada, the startling changes in our own defence posture as a result of last week's budget leads us to further discussion of our own forces. What will be our roles and responsibilities? Where will they be? How will they be carried out? The answers to these questions are dependent upon recognizing the changing strategic environment and any resulting changes in strategic doctrine.

It is therefore within the context of this dynamic and challenging environment that we today attempt to stop, to take stock, and to assess new directions for deterrence, defence and disarmament, and to consider our nuclear strategy in the 1990s.

BLEMA STEINBERG

THE DOCTRINE OF DETERRENCE: AN HISTORICAL OVERVIEW

General Larose

Our first subject is the doctrine of deterrence.

We are fortunate to have with us today Dr Blema Steinberg, to review the doctrine of deterrence and to provide some insights into its history. She is Associate Professor of Political Science at McGill University, where she teaches courses on Deterrence, Strategy and Arms Control, and the Foreign Policy of the Superpowers. Dr Steinberg recently completed a programme at the Canadian Institute of Psychoanalysis, and has been exploring the interface of psychoanalysis and political science. She is the author of 'Strategists, Psychoanalysts and Nuclear Deterrence' which was published in *Psychoanalysis and the Nuclear Threat* in 1989, and is currently working on a book titled *Shame and Humiliation in International Politics: A Psychoanalytic Perspective.* So you can see that our subject is broader than many of us may think. We are very pleased to have Dr Steinberg address us now.

Dr. Steinberg

Thank you. It is a pleasure to be here.

Everyone knows what deterrence is — the use of threats of harm to prevent someone from doing something you do not want him to. There is nothing very complicated about that idea — people dislike harm, so they shy away from actions which promise harm. Most of us first come face to face with it as children — confronting threats of a spanking to keep us out of the cookie jar or from self-expression in crayon on the wall. Later we resort to it in dealing with our own children. It even seems to work with animals, in housebreaking the puppy, and getting the cat to stop climbing up the drapes.

At the international level, deterrence may be understood as the persuasion of one's opponent, through the use of threats, that the costs and/or risks of a given course of action he might take outweigh its benefits. The complications involved do not concern the central idea of deterrence, which is apparently simple, but have to do with finding the right means for implementing it — how best to threaten and, if that fails, to punish.

Theorizing about deterrence, as it operates between states, seems to be a relatively new phenomenon — certainly since the Second World War. But the practice of deterrence in a commonsensical instinctual way is certainly as old as the military art itself. One of our earliest military writers, Thucydides, in his study of the Peloponnesian War recounts many instances where one side or another manoeuvred for allies or other advantages in such a way that its opponent would think that beginning a war, or expanding it, would not be worth the risks or costs. Among other early writers, Emperor Leo of Byzantium and Machiavelli both emphasized the 'show of force' and similar devices as economical means of persuading an enemy that the cost and risks of aggressive action might be too high.

The balance-of-power system adopted generally in the eighteenth century and reaching its height in the nineteenth century had a number of features in common with what today would be called 'deterrence' systems. In particular the core concept of the balance-of-power system was that the military capability available to any combination of powers should be sufficiently balanced so that full-scale conflict would appear profitless. Indeed a principal aim of diplomacy was to insure the stability of the deterrent balance and reinforce it as required. With the collapse of that system in the First World War, and the gradual emergence at the end of the Second World War of two Superpowers, the United States and the Soviet Union, deterrence came to be based not on shifting diplomatic alliances, but on the balance of terror predicated on the concept of approximate technological parity.

The atom bombs that ended the Second World War, and the bipolar world that emerged, set the stage for the emergence of contemporary deterrence theory. Nuclear explosives guaranteed that an entire nation could be shockingly hurt — damaged far beyond the historical experience of modern societies — without its own military capabilities being able to prevent it.

Thus a sharp, radical distinction between the power to hurt, and the power to defeat military forces — a distinction between 'punishment' and 'victory' emerged. Deterrence was conceived in its modern sense when it became possible to threaten vast damage and pain while leaving opposing military forces intact.

As long as the United States possessed an atomic monopoly, it remained unconcerned about how to deter a Soviet attack on the American heartland; in fact American strategic thinkers thought erroneously that it would be possible to deter Soviet moves against so-called grey areas of the world by threatening massive retaliation against the Soviet Union. Once the Soviet Union broke the American monopoly and developed the ability to deliver thermonuclear weapons on American soil, threatening nuclear armageddon for limited Soviet incursions lacked credibility, particularly as each side's arsenals grew to ensure a second strike retaliatory capability.

As the threat of mutual assured destruction became an existential reality, American strategic thinkers struggled with the issue of how to deter the Soviets in that environment. The doctrine of flexible response in the 1960s and its successors, the counterforce and countervailing strategies of the 1970s and 80s, were all designed to address that issue. Stripped to its essentials, the problem for which a solution was being sought was the following: if all-out war between the Superpowers means the destruction of the United States, would not American leaders prefer to see Western Europe conquered by the Russians — bad as that outcome would be — rather than attacking the Soviet Union with nuclear weapons and having the Russians retaliate and decimate American cities? Taking this logic a step further, doesn't Soviet possession of a second strike capability undermine the credibility of an American threat to destroy Russian cities in response to an initial Soviet attack that is limited to United States land based missiles? In both cases, what is needed, according to the countervailing strategists, are more implementable options such as limited counter-force targeting of Soviet missile forces, and command and control facilities.

Unfortunately, strategic doctrines that focus on war-winning and war fighting capabilities ignore the fact that no amount of flexibility, no degree of military superiority at levels less than all-out war, can change the fundamental attribute of the nuclear age — the existence of mutual assured destruction as a fact, irrespective of policy. Not only can each side destroy the other if it chooses, but that outcome can grow out of conflict, even if no one wants it to. Most of the dilemmas of United States defence policy stem from the vulnerability of its cities, and countervailing strategies cannot resolve that. Once each side can destroy the other, any crisis brings up the possibility of this disastrous outcome.

There are, moreover, at least two other serious problems with the countervailing strategy. The Russians are likely to see current United States strategy as an attempt not only to contain them, but to menace their security. A cautious Russian leader could easily take the view that the doctrine is aimed at providing a first strike capability, thus weakening the chances for further arms control agreements and other mutually beneficial relationships. Second, an acceptance of the countervailing strategy increases the risk that decision-makers will talk themselves into believing that high levels of conventional violence and even limited nuclear wars can be kept under control.

In its call for escalation dominance, the 'countervailing strategy' downplays the extent to which any Superpower crisis involves competition in risk taking. As well, it underestimates the over-all ability of American decision-makers to defend their interests in the face of Soviet military strength, and overestimates the ease with which they can prevail if they have the ability to deny the Soviets local military advantages. By missing the importance of the willingness to run risks, the strategy may leave the decision-makers psychologically ill-equipped to deal with confrontations that starkly reveal the inability of even an excellent military position to ensure security.

If the countervailing strategy has been the latest doctrinal innovation designed to bolster deterrence theory by strengthening offensive capabilities, the Strategic Defence Initiative and ballistic missile defence systems are their counterpart for defensive capabilities. Because the threat of mutual assured destruction may fail to deter, strategists have long sought to develop an impregnable defence for ballistic missiles, and with President Reagan's prodding, for civilian populations at large. In effect, what this approach promises is to decouple security from the behaviour of the opponent. Security becomes a function of the adequacy of a state's ability to shoot down incoming enemy missiles. It is no longer contingent on deterring the opponent from launching an attack.

While the scientific, technological and financial difficulties involved in developing a viable BMD system have been documented at length, the implications for deterrence theory are less clearly understood. Proponents of SDI refuse to consider the risks to deterrence that an asymmetrical development of ballistic missile defence systems would have in encouraging the weaker party to engage in a preventive attack. If each side pursues the chimera of perfect or near perfect defences, each will also be driven to acquire new offensive weapons to prevent its opponent from achieving its goal. Furthermore, it might be tempted to use these weapons pre-emptively lest the possibility of a second strike be prevented by the opponent's defensive shield.

Nor do proponents of missile defence systems focus on the psychological impact of an impenetrable shield on the behaviour of the stronger party — the stimulation of aggressive fantasies. If the threat of mutual assured destruction were to disappear, the attraction of unilateral assured destruction could replace it. Perhaps most importantly, even if perfect defences were theoretically possible, they are not inherently static; thus, each side would be driven inexorably to regard the smallest technological changes in its adversary's offensive capabilities as potentially undermining its own defences. In this situation it might feel driven to improve its offensive capabilities, and to strike pre-emptively before its opponent could maximize his advantage.

Underlying much of the traditional thinking about alternative deterrent strategies are a number of critical assumptions about human behaviour that can be subsumed under the rubric of rational deterrence theory. Its principal postulates are three-fold: first, that actors have exogenously given preferences and choice options, and they seek to optimize preferences in the light of other actors' preferences and options; second, variation in outcomes is to be explained by differences in actors' opportunities; and third, the state acts as if it were a unitary rational actor. While many different models of deterrence have been constructed using these assumptions, they all emphasize the use of threats to induce the opponent to behave in desirable ways.

In this classical approach to deterrence, the onus of responsibility rests clearly in the hands of the defender. Successful deterrence is seen to depend on the ability of the defender to manipulate the challenger's rational cost-benefit calculus in order to convince him that the cost of the action he is contemplating will exceed any possible gain. Should deterrence fail, rational deterrence theorists argue that the explanation is to be found in the behaviour of the defender; either it lacked the military capability, the necessary resolve, or it failed to communicate and signal its commitment to the challenger in a clear and unequivocal fashion.

Case studies of international conflict contradict this depiction of international relations in important ways. They indicate that the existence of a vulnerable commitment is neither a necessary nor a sufficient condition for a challenge. At different times in history, 'vulnerable' commitments have not been challenged—states don't always jump through 'windows of opportunity' — while commitments that most observers would consider credible have been challenged.

Classical deterrence theory also assumes that utility can be equated with narrow calculations of cost and gain, that is, in terms of the political, material and physical well-being of leaders and their states. This disregards a host of other values — emotional, intangible, unquantifiable things — that history reveals to be at least as important for most people. Why did the Confederacy challenge the North, which was clearly superior in military power and potential? Why did Southerners continue their struggle at tremendous human and economic cost long after leaders and soldiers alike recognized it to be a lost cause? From Masada to the Irish Easter Rising, from Thermopylae to the resistance of the beleaguered Finns in 1940, history records countless stories of peoples who waged costly struggles with little or no expectation of success. Honour, anger, a sense of humiliation, and concerns for national self-respect proved more compelling motives for action than pragmatic calculations of material loss and gain.

We have numerous examples of confrontations in which states challenged important commitments of their adversaries even though such policies clearly risked war. Almost without exception, these crises could most readily be traced to grave foreign and domestic threats that leaders believed could be overcome only through an aggressive foreign policy. Examples of this phenomenon are July 1914, Korea (1950), Sino-India (1962), Cuba (1962), The Middle East (1973) and The Falkland-Malvinas (1983). Expectations of a dramatic, unfavourable shift in the external balance of power, the vulnerability of a state's political system, the weakness of political leaders, or intra-élite competition for power have predominated in the thinking of challengers, leading to deterrence failures. Careful attention by such challengers to the defender's possible response, as part of a rational calculation of costs and benefits, was conspicuously absent. A typical pattern emerged in which the challenger was so consumed by its own pressing external or internal needs to alter the status quo that it engaged in wishful thinking, denial and other such psychological sleights-of-hand, in order to avoid serious contemplation of its adversary's interests, commitments and capabilities.

A case in point is the Cuban missile crisis. The Soviet challenge to the United States — the installation of missiles in Cuba — was interpreted by deterrence theorists, for decades, as demonstrating an American failure to communicate the credibility of its commitments sufficiently to deter the Soviet Union. Responsibility focused on President Kennedy's projection of weakness at the Bay of Pigs, and at the Vienna Summit which could have led General-Secretary Khrushchev to think that he could get away with his 'quick fix' in Cuba. More sober second thoughts and the new information that has emerged from disclosures of some of the crisis participants suggest a different picture, that of a Soviet challenger that felt so vulnerable because of its overwhelming strategic inferiority that it was incapable of calculating the consequences of its actions.

When the Kennedy administration put the Russians on notice in Roswell Gilpatric's public speech in May 1961, that it was aware of the full extent of their strategic vulnerability, that act, in the overall context of the Administration's pronounced and costly effort to achieve strategic superiority, left Khrushchev with the feeling that the Soviet Union could no longer afford to wait for the next generation of Soviet ICBMs to come on line. Khrushchev's needs to offset the deteriorating strategic balance became pressing. But his choice of a quick-fix in Cuba was not the hallmark of the rational actor that traditional deterrence theory celebrates.

Even though a successful Soviet installation of missiles in Cuba would have added two-thirds to the total Soviet nuclear arsenal, such a deployment cannot be fully explained by the precepts of rational deterrence theory. Its contribution to resolving Soviet strategic inferiority and to strengthening the Soviet deterrent posture was extremely limited given the vulnerability of these soft target missiles to conventional and nuclear attacks from the United States, and the difficulty in co-ordinating their use with Soviet ICBMs in a first strike attack. Khrushchev's challenge to the United States also stemmed from his deep concern that Cuba might be lost to the communist camp. The Bay of Pigs fiasco, the American economic boycott of Cuba, its expulsion from the OAS, and on-going American efforts to destabilize the Castro régime all fuelled Soviet fears. Cuba's loss to the American 'imperialists' would have been a humiliating testament to Soviet inability to protect the territorial integrity and political independence of its Marxist ally.

According to the Soviet participants at the 1987 Cambridge Conference, a third factor contributing to the Soviet decision to place missiles in Cuba was the presence of American Jupiter missiles in Turkey. Khrushchev, they intimated, installed the missiles in Cuba to avenge the sense of shame and humiliation he experienced as a result of the installation of the Jupiters in Turkey. The story they recounted was as follows: in the spring of 1962, Khrushchev, on holiday on the Black Sea, fell asleep on the veranda of his dacha after lunch. He awoke late in the afternoon, observed the beauty of the scene — the sea and the horizon — and commented on its peaceful quality to his comrade, Deputy Marshal Malinovsky. The Soviet general is reported to have bellowed: 'Peaceful! Don't you know that what is being installed on the other side of the horizon are American missiles targeted on Soviet territory.' Three weeks later, on a visit to Bulgaria in May, Khrushchev is said to have remonstrated: 'Why should we have missiles sticking up our ass and they have none! I'm going to stick it to him (Kennedy) too — maybe then they'll know what it feels like.'

Khrushchev's language reveals the extent to which American behaviour had left him feeling humiliated; it also demonstrates the way in which he hoped to repair his damaged self esteem by engaging in aggressive behaviour designed to humiliate his Superpower opponent — deceptively installing missiles in Cuba and lying about it. It may also explain, in part, why the number of missiles in Cuba were in excess of the fourteen obsolete Jupiters in Turkey, beyond what was necessary to defend Cuba, and yet still insufficient to redress the overall strategic imbalance. As powerful symbols, having more missiles in Cuba than the U.S. had in Turkey could have provided Khrushchev with the unconscious fantasy that he had triumphed over his Superpower rival and eradicated the differences in their relative power which he experienced as so humiliating.

Evidence drawn from this and other cases of deterrence failures indicates that deterrence is a risky and uncertain strategy. It suggests that the utility of deterrence is limited to a narrow range of conflicts: those in which adversarial leaders are motivated largely by the prospect of gain rather than by the fear of loss, and are vulnerable to the kinds of threats that a would-be deterrer is capable of making credible.

Deterrence must also be practised early on, before an adversary commits itself to a challenge and becomes correspondingly insensitive to warnings that its action is likely to meet with retaliation. Unless these conditions are met, deterrence will at best be ineffective and at worst counterproductive.

These conditions apply to deterrence in the short term — that is, to specific deterrence encounters. But what about the utility of deterrence in managing adversarial relationships over the longer term. Traditional deterrence theorists maintain that it can facilitate conflict resolution by convincing a challenger that its fundamental objectives cannot be met through a use of force. This realization may provoke a reorientation of policy and lay the groundwork for a subsequent accomodation. The relationship between Egypt and Israel in the last decade can, in fact, be read this way. However, deterrence can also retard conflict resolution by exacerbating the cause of the conflict or by creating new incentives to use force. Three different processes can contribute to this negative outcome.

Deterrence can intensify the pressures on adversarial leaders to resort to force as it did in the Cuban missile crisis. Deterrence can also intensify conflict by encouraging defenders to develop an exaggerated concern for their bargaining reputation. Deterrence assumes — incorrectly according to several empirical studies — that the most important component of credibility is the defender's record in honouring past commitments. As Thomas Schelling, author of one of the most influential studies of deterrence wrote: 'We tell the Soviets that we have to react *here* because, if we did not, the world would not believe us when we said that we will react *there*.'

Sensitivity to their bargaining reputation encourages leaders to make or to exaggerate the importance of commitments that lack substantive worth. Traditional deterrence theorists acknowledge that while few parts of the world are intrinsically worth the serious risk of war by themselves, defending them or running risks to protect them may preserve one's commitments to action in other parts of the world. What this perspective ignores is the possibility of escalation inherent in the interconnection among commitments.

The United States commitment to the defence of Quemoy and Matsu is a striking example of this kind of deterrence logic and of its dangers. The Eisenhower administration recognized that neither island was of any value to the defence of Taiwan; they were useful only as possible stepping-stones for an invasion of the mainland, something Washington never contemplated. American leaders acknowledged, moreover, that the islands were militarily exposed since they were only a few miles from the Chinese mainland and well within range of shore-based artillery. But Eisenhower feared the loss of the islands would undercut deterrence in Asia and accordingly, he committed the United States to their defence. The paradoxical effect of the president's commitment was to encourage Chiang, now secure in the expectation that Washington was committed to the defence of the islands, to carry out the provocative buildup on Quemoy and Matsu that helped provoke a war-threatening confrontation.

The most far-reaching expression of this 'logic' was Vietnam. American leaders committed forces to Vietnam in large part because they were persuaded that failure to defend their commitment in Southeast Asia would encourage Moscow to doubt United States resolve elsewhere in the world. As Secretary of State Dean Rusk expressed it: 'The communist world would draw conclusions that would lead to our ruin and almost certainly to a catastrophic war.'

Despite the adverse consequences of Vietnam, the American belief in the interdependence of commitments appears undiminished and continues to influence policy. In 1974-75, it prompted the Ford administration to provide covert aid to two of the contending factions in the Angolan civil war. When Congress compelled the administration to terminate this support, an irate Henry Kissinger predicted that this would lead to further Soviet and Cuban pressures on the mistaken assumption that American had lost the will to counter adventurism or even to help others to do so. More recently, members of the Reagan administration argued vigorously that the Soviet Union would become even more emboldened through the Third World if the United States failed to help Central American governments combat left-wing military challenges.

The processes I have just described are important contributing causes of tension, misunderstanding, and fear between adversaries. They point to the greatest long-term danger of deterrence: its propensity to make the worst expectations about an adversary self-fulfilling. Threats and military preparations, the currency of deterrence, inevitably arouse the fear and suspicion of those against whom they are directed. Over time, military preparations, initially a consequence of tensions between states, can become an important cause. This kind of dynamic is most in evidence in the relations between the United States and the Soviet Union. The misunderstanding and tension caused by demands for ever-more sophisticated weaponry in the name of deterrence, superimposed on the substantive issues that divide the protagonists, make these conflicts more acute, more difficult to manage and less amenable to resolution.

The outlines of the policy dilemma are clear. Protagonists to a conflict need deterrence to prevent their adversaries from resorting to force, but the use of deterrence can simultaneously make the conflict more acute and more likely to erupt into war. Because deterrence alone can be ineffective, uncertain, and risky, it must be supplemented by other strategies of conflict management. These strategies, which can be grouped together under the rubric of reassurance, can sometimes substitute for deterrence or, more likely, complement deterrence and reduce some of its obvious risks.

Strategies of reassurance begin from a different set of assumptions than does deterrence. They, too, presume ongoing hostility but, unlike deterrence, root the source of that hostility not primarily in an adversary's aggressive search for opportunity, but rather in its sense of acute vulnerability. Reassurance dictates that defenders try to communicate to their adversaries their benign intentions. They ought to do so to reduce the fear, misunderstanding and insecurity that are often responsible for unintended escalation to war.

There are a number of reassurance strategies that can work. Beginning with the most ambitious, leaders can attempt to shift the trajectory of the conflict and induce co-operation through reciprocal bargaining strategies. Leaders can also try to break out of habitual patterns of conflict through less conventional methods of unilateral and irrevocable concessions, as President Sadat did in 1977, when he visited Jerusalem. Sadat's initiative was irreversible and not without significant costs. By breaking the long-standing Arab taboo of not treating directly with Israel, he incurred the wrath of other Arab states and his own foreign minister resigned in protest. Because Sadat's visit represented an irrevocable concession, Israeli leaders were able to focus on the deed, rather than just words, and to alter their traditional assumptions and expectations. A vicious cycle of spiralling conflict was broken.

If leaders are pessimistic about or disinterested in these more ambitious strategies, they can try through more modest strategies to compensate for some of the obvious weakness of deterrence. They can attempt through self-restraint not to exacerbate the pressures and constraints that operate on an adversary who may choose force because of the costs of inaction. They can also try informally to develop 'norms of competition' to regulate their conflict and reduce the likelihood of miscalculated war.

Evidence is beginning to cumulate from a range of historical studies about the factors that contribute to the failure of deterrence, but not enough is known about the conditions associated with its success, or with the success or failure of reassurance. In the management of international conflict, the available evidence suggests that deterrence and reassurance are appropriate at different times in different sequences.

Deterrence is appropriate only when adversarial leaders are motivated largely by the prospect of gain rather than by the fear of loss, are free to exercise restraint, are not misled by grossly distorted assessments of the political-military situation, and are vulnerable to the kinds of threats a deterrer is capable of making credible. If challengers do not share these cognitive, motivational and political attributes, a strategy of deterrence is likely to fail.

The evidence also suggests that when would-be challengers feel politically vulnerable or fear attack from abroad, deterrence as a strategy of conflict management may provoke the very response it is attempting to prevent. There is considerable support for this proposition from behavioural decision theory which suggests that people will take much larger risks to avoid loss than to seek gain. When leaders seek to avoid loss, deterrence and/or strategic vulnerability may provoke motivated distortions of basic processes of inference, estimation and judgment, which can lead to war. When would-be challengers are motivated largely by need and are seriously constrained at home and abroad, variants of reassurance can supplement deterrence. Reassurance promises to reduce the distrust and fear than can propel a challenger to use force. It can succeed, however, only with an adversary who is concerned primarily about its own security and does not seek to exploit.

Preliminary historical and comparative research suggests that modestly conceived reassurance strategies may be effective in reducing some of the obvious risks of deterrence. In the context of long-term deterrence, self restraint, the development of informal forms of competition, and limited security régimes can help reassure a vulnerable adversary and reduce the likelihood of unwanted war.

Designing strategies of conflict management that combine components of deterrence and reassurance is no easy task. Nevertheless, sensitivity to the limiting conditions of each strategy, to their relative strengths and weaknesses, and to their interactive effects is essential to the management of international conflict if we wish to avoid war.

General Larose

Dr Steinberg is ready to take questions now, and Colonel Sosnkowski will monitor the question period.

Colonel Tony Sosnkowski

We have heard this brilliant exposition by Dr Steinberg on how the complexity of human personality spoils the symmetry and simplicity of deterrence theories. We are now open to questions and discussion, or the presentation of your own comments.

Dr Kenneth Hilbourne, University of Western Ontario

It seems to me that the Quemoy situation should be viewed in a context different from mere deterrence. I think that Secretary of State Dulles achieved exactly what he wanted to achieve in the Quemoy crisis of 1958. This was not just to establish the principle of deterrence, but rather to drive a wedge between the Chinese communists and the Soviet Union. From documentary evidence that came to light in fairly recent years, we know that Dulles was quite deliberately trying to push the Chinese communists into a position of dependence on the Soviet Union for help against the American colossus. Dulles calculated that the Soviet Union would be afraid to give that help to the Chinese communists because of American nuclear superiority. The Soviet Union would let China down, the Chinese communists would be resentful, and this would contribute to a breakdown of relations between the Soviet and Chinese communist régimes. This appears to have been Dulles' diplomatic strategy, and it seems to have worked rather well, so I think we should not look upon the Quemoy crisis as a failure of deterrence, but rather as an achievement of Dulles' diplomacy.

Dr Steinberg

You are right in that one has to see the crisis in a multi-dimensional fashion. My argument was somewhat different. It may well be that Dulles' strategy in driving a wedge between the Chinese communists and the Soviet Union worked. My point is that it was a potentially very risky strategy, because in his effort to do that he apparently was seen by Chiang Kai-shek as giving him a green light to behave in a very provocative fashion. Once again we see that the Superpowers are often unable to control the behaviour of their so-called proxies, and by allowing Chiang Kai-shek to feel that he had great freedom of manoeuvre, his buildup on Quemoy and Matsue created a situation between mainland China and the Chiang Kai-shek government that might ultimately have produced a conflict which could have involved the United States.

Mrs Margaret Hoddinott

I was interested in your concepts regarding reassurance. Much work has been done, particularly in the academic field, on confidence-building measures in this matter. However, one learns very early in one's military training of the role of deception, and I think that despite the fine words that come from the political side of a reassurance posture, one has to deal in some way with the many facets of deception.

Would you comment on the interface between the psychology of deception and how it is practised and the concept of reassurance?

Dr Steinberg

Clearly one of the great problems in pursuing a reassurance strategy is trying to assess the intentions of the opponent. You are quite correct to point out that there is a very great danger that misinformation, disinformation, and deception of various types will be tried by an aggressive challenger, designed to lull the opponent into thinking that his intentions are peaceful and benign. I concluded by saying that it is never easy to be certain about the intentions of one's opponent and states are very concerned that they are not duped. A number of you may have seen yesterday's *New York Times* which reported that the State Department is now proceeding to collect all of the public statements of Chairman Yasser Arafat and the PLO in order to try to determine what are the real intentions of the PLO. Are they engaged in a 'deceptive strategy'? Is it their intention to go back to 1947 and acquire the entire area which they originally called for under the terms of the Palestine National Covenant? Precisely because Israel is so concerned about the possibility of deception, they tend to regard all of these statements as mere words which can be changed. Thus what is important in convincing a defender that his opponent is genuinely interested in resolving a situation, or that peace is possible, is often some measure of action rather than just words.

I don't disagree that deception can be a problem. but the premise that the opponent, *by definition*, is interested in maximizing his gains, will strike when he feels mush rather than steel, and will build up his armaments as far as possible, ignores the basic stability/instability paradox, which is that the more one tries to be secure by relying on military means, the greater the likelihood that the opponent will respond in kind. Further, we don't know the extent to which our behaviour stimulates his fears that *we* are aggressive. We tend to operate from the notion that we are benign and the opponent is aggressive, and we fail to appreciate the extent to which the opponent often has the same image of us.

Dr George Lindsey

In using history to examine the success and failure of deterrence, it seems to me that there is a sort of logical asymmetry that makes it difficult: that is, whenever a war broke out, it was said that deterrence had failed. The opposite should be that you could prove cases where war did not break out because deterrence succeeded. But you can't do that logically because perhaps some other reason prevented war from breaking out. Supporters of deterrence point out that we have not had a war in Europe for 40 years, so deterrence must be successful. But opponents may say that some other reason prevented it and war may break out tomorrow, so deterrence is not going to work. How can one cope with this asymmetry — that you can prove when it fails but you cannot prove when it succeeds?

Dr Steinberg

You have raised the critical intellectual problem in this whole process. It is extremely difficult, as you suggest, to prove success from non-events. If, in fact, deterrence worked, we cannot measure why it worked. We don't even know that it worked, or what caused it to work. We have much better case studies of its failure.

I suppose my response to that is that maybe we really are interested in its failures, because it is its failures that ultimately determine the future of ourselves and our children. I acknowledge the legitimacy of the philosophical problem that you raise. But more research has to be done and people who are working in this field are attempting to research cases where deterrence has clearly worked. The case of Western Europe is a classic example. We have had peace for 40 years. Why have we had peace? The military historians and military strategists argue that the role of NATO has been a significant and powerful one. Critics, on the other hand, argue that this *presumes* that after 1945 the Soviet Union would have moved into Western Europe and wanted to expand the base of communism in Western Europe. They would say that the evidence suggests that the Soviet Union had no such intentions, that it felt extremely vulnerable, was very concerned about the penetration of American influence in Eastern Europe, had been the victim of three major land invasions in its relatively recent history, and was desperately concerned to bolster itself so that it would never again be the victim of a land invasion.

It boils down to the perspective of the opponent. No one here would argue that reassurance is a strategy that should have been used against a Hitler. The question becomes more subtle and complicated when one is trying to assess the intentions of the opponent when it is a more conventional actor. In the case of the Soviet Union, in the case of Communist China — should we, for example, pursue the same policies vis-à-vis the Soviet Union under a Stalin as under Khrushchev or Andropov? There have been profound changes in Western attitudes towards the Soviet Union. But the real question is: what has changed? Has Gorbachev, for a variety of reasons, made it appear that he is more concerned about the potential for loss and is not likely to pursue an aggressive foreign policy? Or are we being deceived?

A great deal depends upon how one assesses the interests and intentions of the opponent. Far too little attention has been paid to engaging in that kind of assessment. We tend to assume the worst case scenario, for obvious reasons. If we're wrong, the costs seem to us to be so damaging that it is better to adopt a worst-case scenario. On the other hand, the adoption of a worst-case scenario ends up creating a situation in which the opponent feels threatened by the size of our buildup, by our insistence upon constantly innovating more and more sophisticated types of weaponry, so that you have a vicious spiralling of conflictual perceptions and misperceptions.

JAMES FINAN

THE UTILITY OF NUCLEAR WEAPONS

Colonel Sosnkowski

Our next presentation is 'The Utility of Nuclear Weapons.' Can you really use the bomb? The psychological barrier is considerable. Moreover, the control of escalation and misinterpretations of intent can also undermine the utility of one's deterrent. Furthermore, the growing destructive capability of advanced conventional weapons is blurring the distinction between conventional and tactical nuclear weapons. When is it appropriate to threaten to use nuclear weapons? How does the ladder of escalation work when the bottom rungs are gone? Deciding when to use, how to use, or whether to use one's nuclear weapons remains a sensitive and thorny issue.

Dr James Finan is one of the few Canadians who can address this issue. He is the director of social and economic analysis in the Department of National Defence. He was until recently the director of strategic analysis in the Operational Research and Analysis Establishment, and is a defence scientist of no mean reputation. We are indeed fortunate to have him speak to us this morning.

Dr Finan

I should start by saying that nothing that I say should be attributed to the Department of National Defence. The views I express are entirely my own.

As an operational researcher, I like simplicity and symmetry in analysis. Therefore, my approach to this problem of deterrence will essentially be from a logical and numerate perspective.

I have been asked to comment on the utility of nuclear weapons.

This appears to be an improper philosophical question and invites consideration of a more basic question — namely, is there any utility in contemporary international politics for *war* as a social invention?

It seems to me that the answer to the second, more general, question must be no, particularly if war includes the use of nuclear weapons. This is so because general nuclear war, given the tremendous power available in central strategic systems, would destroy precisely those institutions and values which war has traditionally been used to support and extend.

If it can be argued that general nuclear war is politically and socially dysfunctional, surely it follows both from the perspective of formal logic and happily from the perspective of common sense, that nuclear weapons are not useful.

It seems to me that the answer to that question cannot be an unconditional *yes*, but must rather be *maybe* or perhaps even *no*. This is the case because, at the most general level, the international system is still clearly not what could be identified as a 'peace' system in which all types of war are seen as lacking utility as dispute-resolving mechanisms. A peace system is characterized in part by the rule of law and due process as principal characteristics in the process of resolving disputes.

What the community of nation states wishes is to prevent the occurrence of particular kinds of war and in this group, nuclear war of all types is seen as a major form of war to be avoided. If this line of argument is accepted, then nuclear weapons have considerable utility because they, paradoxically, in light of their characteristics which put them outside the bounds of normal international politics, are unusable and make nuclear war as a conflictual form unacceptable.

What I have offered above is recognizable as a very general description of nuclear deterrence.

There is a need to recognize, however, that this ordering principle, which defines the perhaps most important element in Superpower relations, rests on a delicate equilibrium which can be readily transformed by too rapid and/or too radical structural changes. Nuclear deterrence which, in my view, is at present characterized by the property of a stable equilibrium may be easily and quickly destabilized by changes which affect it that are instituted without due consideration of the delicacy of the arrangement.

Nuclear Deterrence: The General Structure

Before starting on a discussion of nuclear deterrence and the place of nuclear and other weapons in this structure, it seems to me that a particular perspective must be accepted.

Before the advent of nuclear weapons, which are carried by missiles and bombers having intercontinental ranges, strategic analysis was mainly geopolitics. Thereafter, mainly as a result of the invention of missile systems which because of their great range 'annihilated geography,' strategic analysis and the politics of nuclear relations have been driven by technical considerations about nuclear weapons. This outlook is characterized by considerations about weapon yield, accuracy, survivability/vulnerability and similar technical facts. So pervasive is this attitude that it seems to me that considerations of nuclear deterrence and related problems/issues such as arms control and disarmament comprise a view which can be most aptly described as 'technopolitics.'

Initially, this approach may appear to be self-evident, but I think it is a perspective which is often lost in discussions about nuclear weapons and their likely impact on relations between the Superpowers and the two principal alliances.

If this technopolitical perspective is ignored or distorted in excess, we run the risk of developing new technologies or modifying or getting rid of existing technologies which would seriously threaten the stability of the delicate equilibrium upon which deterrence rests.

Any form of deterrence comprises a threat or a set of threats designed to prevent an opponent from engaging in activities which the deterrer considers to be unacceptable for whatever reason. The essence of the threat, in terms of its credibility for the object of deterrence, is the property of *unacceptable damage* — that is, a threat which promises the opponent greater losses than he could hope to gain from any action which the deterrer wishes to avoid, whether that action be diplomatic or military in nature. Thus, unacceptable damage has both a physical dimension in terms of the actual physical damage which may be inflicted and a psychological/political dimension in terms of assessments by the deterrer that such a level of physical damage is unacceptable.

The psychological/political dimension of unacceptable damage is often very difficult to define and comprises a continuing area of uncertainty in the construct of nuclear deterrence for both parties in the deterrent relationship. Clearly, the deterrence includes an element of *reluctance* as part of its structure. The deterrer, by adopting the posture, indicates that he has the capacity to wage an offensive war, but, for whatever reason, would rather not do so.

Thus deterrence must possess two forms of *credibility* if it is to be successful — namely, technological credibility and political credibility.

In the former case, the deterrer must convince his opponent that he has the technological means to deliver unacceptable damage, however that has been defined, in the face of what is seen as unacceptable provocation. Bluntly, the party being deterred must know that the deterrer has the necessary weapons and believe that they work.

The second form of credibility is usually difficult to perceive or convey directly and therefore parties to a deterrent relationship are left to *infer* political credibility from the *technical characteristics* of weapons deployed. The creation of political credibility is, then, a archetypal form of technopolitics for all parties in a deterrence relationship.

Given the importance of technological credibility in the creation of overall credibility, it is of paramount importance that the deterrer demonstrate, through realistic tests and published information on weapons effectiveness, that at least in technical terms, weapons deployed can be used to fight a war effectively if necessary.

I would argue, therefore, that the presence of war-fighting capabilities in a deterrent posture adds to the power of the posture rather than detracting from it. The issue of war-fighting is one to which I will return later in this paper in the discussion of extended deterrence.

Deterrence: Minimum and Extended

So far, my discussion has concentrated on exposing very briefly what I consider to be important elements in deterrence, both as a logical structure and as a set of related Superpower policies. I would now like to turn to a consideration of different forms of deterrence in order to use these different perspectives to extend our understanding of some of the issues in contemporary deterrence relations. In this context, I want to explore the difference between *minimum* and *extended* deterrence.

Minimum deterrence has been described as 'a . . . strategy based on a *few* weapons which are assumed to be a) sufficiently destructive to inflict unacceptable damage . . . and b) invulnerable.'[1] Given the nature of such a force and the manner in which it is intended to work, it is essentially a *heartland* policy designed to protect the core values of the state which has elaborated the policy.

From this perspective, the nuclear forces of the United Kingdom and France are essentially minimum deterrent forces. The nuclear forces of both these countries are intended to protect ultimately their own territory and population and are mainly based on the notion of retaliation after an attack of significant size has been received.[2]

The essence of minimum deterrence, then, is the maintenance of sufficient retaliatory forces to deliver a return strike against an opponent. Without such forces, the strategy cannot work and the policy is without substance. At the same time, a posture of minimum deterrence is not extended to protect the interests of third parties. As such it is a posture which does not serve well the interests of any group of states operating a protective alliance based on deterrence with nuclear weapons.

Extended deterrence, on the other hand, is a protective posture designed to include third parties within its rubric. It has been described as 'a declared extension of the intention to retaliate if an attack is made on some specified third party territory.'[3]

Clearly, a state operating a strategy of extended deterrence, such as the United States or the Soviet Union, would not wish, in the process of deterring an opponent from initiatives below the level of 'heartland' deterrence, to invoke the ultimate level of nuclear response.

There is, therefore, in extended deterrence unlike minimum deterrence, a need for a set of deterring options below the ultimate level of a general nuclear exchange if the posture is to be both technologically and politically credible.

These levels of possible deterring responses have been referred to generally as the escalation ladder. They comprise a range of proposed punitive responses designed to give the party exercising the strategy a capacity to threaten in a nuanced and realistic way, thus increasing the probability that an opponent will refrain from taking undesirable initiatives.

Extended deterrence incorporates the notion that threats of violence or actual violence do not comprise limited liabilities. It is a shared liability. Such a strategy is the essence of an alliance based on nuclear deterrence.

If a strategy of extended deterrence is to function properly, it is the case that those managing the strategy must have available to them an array of options designed to meet any level of threat the opponent may use. Technologically, escalation dominance comprises the continued search for weapons which have more precise and more tailored effects so that possible punitive responses can be made available which threaten only marginally greater force than that used by an opponent.

Such an approach incorporates the *proportional use of force*. In the context of extended deterrence, at least as it is seen by the United States and NATO, this is an essential property for credible deterrence for two reasons: 1) threats of excessive use of force in response to initial threats tend to be seen rightly as incredible and lead to unwanted immediate and subsequent dangerous challenges, and 2) excessive use of force in response is seen as a limitation on the capacity of antagonists to stop the process of escalation once it has begun.

This second important characteristic is referred to as *redeterrence* or *intrawar deterrence* and comprises an important element in overall deterrence as it has been elaborated by the United States and NATO.

It has been claimed, perhaps rightly, that extended deterrence, the general form of which has been described here, is excessively rational and unworkable in real terms. This is perhaps the case, but in a world which so far has not opted for a peaceful approach to international problems, extended deterrence is for the time being a useful approach between the Superpowers and the major alliances.

Arms Control, Disarmament and Extended Deterrence

The greatest concern voiced about extended deterrence relates to arguments that it endlessly commits the Superpowers to a competitive relationship in the production of arms. If one does not look beyond the form of extended deterrence, this is an argument which may well be true. Inherent in extended deterrence is the search for new and better weapons as each party to the deterrent relationship searches for the property of escalation dominance. A major reason this condition prevails is because neither side as yet has exhibited the necessary level of mutual trust required to monitor the qualitative nature of the arms race which is what escalation dominance is mainly about.

For the above reason, major nuclear arms control efforts, such as SALT I, SALT II, INF, and START, have concentrated essentially on numbers since these data are ones much more readily available to all involved through national technical means (NTMs) without the need for mutual trust.

Two related arguments are made concerning extended deterrence as a result of the qualitative competitive element in it: 1) such competition destablizes the existing equilibrium of deterrence and 2) it is in the nature of the posture that it promotes war-fighting policies. Clearly, unregulated competition can and will destabilize deterrence equilibrium.

If that is the case, it is important for us to know what the elements of stable equilibrium are and how we can maintain such a condition. Fundamentally, if each of the Superpowers within the context of extended deterrence can credibly retain a capacity to retaliate at unacceptable levels should a nuclear context escalate to the ultimate level, then an equilibrium exists between the Superpowers and the major nuclear alliances.

In general, the equilibrium will be stable if there exists for each Superpower the sense that survivability of these residual retaliatory forces has not been endangered.[4] If, however, as a result of asymmetries in numbers and/or as a result of some technological breakthrough, such forces are made significantly more vulnerable, the existing equilibrium grows more susceptible to becoming unstable in the face of perturbations of various degrees of intensity and of various kinds.

From the above argument, it follows logically that as the number of pre-conflict central strategic systems more and more closely approximates the minimum number required to deliver assured destruction, the stability of the central strategic balance becomes more prone to becoming destabilized and devolving into a nuclear war. It is worth noting here that extended deterrence from this perspective includes the prior concept of minimum deterrence.

Having talked briefly about the nature of deterrence stability, I want to consider the processes of arms control and disarmament.

At the outset, it must be made clear that from my perspective, these two mechanisms are not the same. *Disarmament*, simply put, means the reduction in the number of weapons held by one, some or all sides who are parties to a potential conflict. *Arms control*, on the other hand, is in my view concerned mainly with *equilibrating* armaments competition between the Superpowers and the principal alliances.

From this perspective, arms control can allow the number and/or the quality of weapons to increase if in the process the stability of the central Superpower equilibrium is enhanced. Insofar as arms control achieves the end of strengthening the nuclear balance, it is serving its central purpose.

I would argue further that in many cases tacit and informal understandings, as distinct from formal agreements, achieved in the context of the attendant pressures associated with such publicly achieved accords, can be more useful in terms of strengthening the central balance.

It was noted above that extended deterrence is often associated with the claim that it is based on 'war-fighting' as distinct from 'war-avoidance' options. As I have argued earlier, if by war-fighting one means that weapons are technologically credible, then this is a useful and important attribute for stable deterrence.

There may, however, be a more important secondary quality to the claims about war-fighting options in extended deterrence that is often missed. All the options in extended deterrence are taken to have the central quality associated with deterrence, which is the threat to retaliate if an opponent engages in undesirable activity. In the sequence of moves between a deterrer and an opponent, the deterrer's move is subsequent; it is second and it is reactive.

But it is obvious that in extended deterrence, many of the so-called deterring options do not share this property and this is particularly true of those towards the lower end of the escalation ladder.

It is the recognition that these options are somehow different than normal deterring options which causes them to be given this secondary sense of war-fighting. This occurs essentially because these are, in my view, not deterrent strategies but rather *compellent* strategies.

Schelling, making the distinction between compellence and deterrence, sees a compellent threat as one whereby '. . . punishment is administered *until* the other acts, rather than *if* he acts.'[5] Compellent strategies are then precedent, primary and proactive.

Such strategies capture the essence of the policy of first-use retained by the NATO alliance and as such they comprise useful and forceful options within the structure of extended deterrence which *do not necessarily undercut the overall reliability of NATO's deterrent posture*. What needs to be realized is that from the perspective of the logic of extended deterrence, compellent strategies are the essence of effective strategies of escalation dominance without which such an overall deterrent posture could not effectively operate. What is critical here is that partners in a deterrent relationship be mutually aware that compellent strategies exist and have a place towards the low end of the escalation intensity scale.

Technological developments, which seem to be more appropriate in terms of compellence rather than deterrence, particularly in the central strategic domain towards the upper end of the escalation intensity scale, can have perilous implications for central strategic stability during times of crisis when they may contribute to the judgments that a disarming first strike may be forthcoming or that a retaliatory blow will be neutralized. In either case, there would likely be increased inclinations to the adoption of dangerous launch-on-warning/launch-through-attack postures.

The Nuclear/Conventional Interface

Having spoken about the low intensity end of the nuclear spectrum, there is merit in considering non-nuclear elements of deterrence strategy.

It can be argued that non-nuclear weapons and particularly conventional weapons have a useful role to play in the spectrum of deterrence options. Such weapons may be useful in indicating by one or both parties to escalate slowly or they may be useful in signalling an interest in intrawar deterrence by being used in lieu of nuclear weapons in a context where the nuclear threshold has already been crossed at a fairly low level.

What cannot be argued forcefully, in my view, is that conventional weapons may be used as the basis for a relatively robust and reliable system of deterrence.

Conventional weapons lack the essential aspects of military force of tremendous lethality and almost certain penetrativity which the combination of nuclear warheads and intercontinental ballistic missiles provide. Moreover, conventional weapons do not present decision-makers in a deterrent relationship with the virtually unassailable knowledge that such weapons, if used, are beyond the scope of any sensible politics. Taken alone, even modern highly lethal conventional weapons can allow decision-makers to believe that war can be sensibly seen as the extension of politics by other means.

Given these arguments which can be made legitimately about the frailty of conventional deterrence, it may be useful to look at the existing START proposals. At present, the proposals suggest limits of 6000 re-entry vehicles and 1600 missiles, with various sub-ceilings on SLBMs, bombers with ALCM and heavy ICBMs.

Given this set of numerical limits, a number of questions arise, at least in a NATO context:

- Would the contraction of overall RV numbers still allow sufficient central system inventory to be assigned to targets outside the Soviet Union?
- In the face of theoretical assessments concerning strategic surprise attack, would the anticipated residual inventory be sufficient to pose a retaliatory threat at unacceptable levels?
- Does the proposed draw-down in central strategic systems, coupled with reductions in INF and possible reductions in battlefield nuclear weapons, imply a move in the direction of conventional deterrence with the inherent uncertainty about the efficacy of such a posture?

The second question is reinforced by concerns about the strategic command, control and communication capabilities of, at least, American strategic retaliatory forces.

Blair captures the essence of this problem when he says: 'Crisis instability is more likely to stem from command system vulnerability. The condition of the United States command structure creates a potentially severe penalty for delay in releasing weapons and thus encourages *early release by U.S. authorities.*'[6]

In the circumstances of the Gorbachev revolution, it is important not to lose real opportunities to reduce the overall number of weapons which START and INF limitations and limitations on battlefield nuclear weapons offer. It would be a mistake, however, to proceed too rapidly in the direction of reductions which could shift the emphasis in deterrent relations towards less reliable conventional systems and could create a central strategic relationship which might be more fragile and one with greater tendencies to crisis instability than is now the case.

It is important that the Superpowers not pursue arms control negotiations simply for public consumption. An incremental approach, which does not introduce precipitous change, is likely to serve the interests of maintaining stable deterrence better than radical change. Bracken argues: 'In our (U.S.) arms control efforts we should emphasize the use of information about operating patterns to control the most dangerous points of contact between American and Soviet nuclear forces.'[7]

The above comprises the development and the refinement of the techniques of crisis management and this is likely the most important thing the Superpowers can do to prevent the failure of deterrence. Arms control should be seen as a set of known operating rules and procedures rather than simply reducing numbers.

The problem of a move toward conventional deterrence can be avoided, of course, through the search for and realization of conventional arms control and disarmament which now appears to be underway. If the negotiations going on at all levels of the deterrence spectrum were to prove fruitful and lasting, a new form of nuclear deterrence would result.

Nuclear Forces and the Future of Deterrence

Both Superpowers, as a result of reduced inventories, would be forced to be concerned more with themselves than with allies in the context of extended deterrence. The importance of regional minimal nuclear deterrent forces would likely increase, with both the British and French forces playing more influential roles in the protection of Europe. Significant Alliance restructuring could well occur, with the United States either only loosely associated with Western Europe or with its presence gone entirely. One can see the possibility of an independent combined British/French nuclear force or a deterrent force consisting of less powerful and formal links. The modernized British force could threaten on its own levels of unacceptable damage, while the French nuclear force could pose at least a serious threat.

Putting force considerations aside, it is likely that no matter what the formal arrangements were, neither the British nor the French would allow serious Soviet incursions into Western European territory without acting in concert in conventional and nuclear terms.

Conclusion

The Gorbachev revolution may signal the start of a new world order — the movement from an international system in which war is seen as a sensible instrument of statecraft to a system where it is seen as a dangerous social relic. But, while optimism about the Soviet Union is necessary, it needs to be tempered with the knowledge that the West is dealing with a *system* and not a *man*.

Since the Second World War, the system of nuclear deterrence has been instrumental in preventing war at the highest levels of potential interstate violence. This has not occurred by accident, but because decision-makers have been ever aware of the awful power of nuclear weapons and the related need to manage the nuclear relationship at all costs. Short-term and apparently easy 'fixes' need to be avoided in order to preserve the integrity of the deterrence system in case the present set of initiatives prove futile. If such a condition were unfortunately to develop, the utility which nuclear weapons have had and continue to have would still be available.

In the absence of a peaceful system of international communication, nuclear weapons can reverse the aphorism that war is the extension of politics by other means. They can force decision-makers to recognize that for nuclear war and those forms of war that may lead to nuclear war the aphorism must read: *Politics is the extension of war by other means.*

Notes

1 From Edward Luttwak, *A Dictionary of Modern War* (New York: Harper and Row, 1971), 82.

2 It might be argued that the possession of battlefield nuclear weapons by France would indicate that its deterrence force is not really a minimum deterrence force. In response, it can be argued that the battlefield nuclear weapons serve the same purpose as nuclear weapons in a minimum force and are not designed to be extended to protect third parties. Secondly it is equally arguable that French nuclear weapons, other than those in strategic submarines (S S B Ns), are quite vulnerable to attack and that therefore only S S B Ns are credible weapons systems.

3 Luttwak, *op cit*, 82.

4 The concept of equilibrium has been given an interesting mathematical form in Albert Legault and George Lindsey, *The Dynamics of the Nuclear Balance*, (Ithica and London: Cornell University Press 1974), 166-199.

5 Thomas C. Schelling, *Arms and Influence* (New Haven and London: Yale University Press 1966), 70.

6 From Bruce G. Blair, *Strategic Command and Control: Redefining the Nuclear Threat*, Washington D.C.: The Brookings Institute 1985), 209.

7 Paul Bracken, *The Command and Control of Nuclear Forces* (New Haven and London: Yale University Press 1983), 244.

GEORGE LINDSEY

STRATEGIC DEFENCE IN THE 1990S

Colonel Tony Sosnkowski

Ladies and gentlemen: the subject of our next presentation is 'Strategic Defence in the 1990s.'

Mutual assured destruction can be expressed through such threats as: 'You wipe out my civilians and I'll level your cities.' This is simple, uncomplicated, and has the seeming virtue of working quite nicely. Can mutual assured survival work as well, or should we ensure that mutual assured destruction will continue?

Today we have Dr George Lindsey to discuss developments in strategic defence and their influence in the 1990s. He also intends to comment on Canada's role and responsibilities in this field. As a defence scientist of formidable experience and reputation, he was Chief of the Operational Research and Analysis Establishment in National Defence Headquarters. He enjoys a splendid reputation in the international community of defence scientists and analysts. Dr Lindsey is also a valuable member of the Executive of the CISS.

Dr Lindsey

The four words 'stable, strategic nuclear deterrence' are all very important. We have had a very good description of what 'deterrence' means this morning. The 'nuclear' part is fairly obvious. But the terms 'stable' and 'strategic' need a little more attention before we get into the details.

What is 'Strategic Defence'?

What is 'Strategic'?

The Oxford Dictionary, published in 1971, defined 'strategy' as 'the art of projecting and directing the larger military movements and operations of a campaign': usually distinguished from 'tactics,' which is 'the act of handling forces in battle or in the immediate presence of the enemy.'

The old military definitions were coined in the days when wars were settled on battlefields or by contests between fleets. Depending on the outcome, peace was declared, along with an agreement which might alter territorial boundaries, colonial jurisdictions, or the rosters of royal families. The victorious armies or navies might have had the physical power to destroy the defeated enemy's cities and commerce, or even to annihilate his population, but since the Middle Ages this has not been the practice in what is now known as the Western world.

Prior to the Second World War, strategic defence would refer to the disposition of national or allied armies or navies in locations enabling them best to resist attack by large enemy land or sea forces, in battles between units of similar character.

The development of the long-range bomber aircraft conferred the power to inflict serious damage to the industry and cities of an enemy without having to defeat his army or navy in the field. The arrival of nuclear fission explosives multiplied this power enormously. It was increased even more by nuclear fusion weapons, and more still by the perfection of ballistic missiles of intercontinental range. With these developments the word 'strategic' became used to describe threats to the central national assets of a country, rather than simply to its armed forces. While it would still be normal for the commander of a large army to speak of strategic deployment of his forces or strategic threat to his forces, on the national scale the word 'strategic' is now used to describe the nuclear threat to the central fabric of a nation, a threat not directly related to the relative capabilities of the armies, navies, or air forces for direct combat with one another.

In recognition of this change, the 1987 supplement to the Compact Oxford Dictionary defines 'strategic' as 'of, pertaining to, or designating nuclear weapons intended to destroy an enemy's capacity to make war.'

What is 'Defence'?

The distinction between 'defence' and 'offence' has a purely technical significance in military terminology. Most weapons can be used for either, and there is an old maxim that the best defence is a good offence. But in the public debates concerning security, war and peace, there are moral tones which favour 'defence' and object to 'offence.' The moral preference for defence is associated with the concept that blame should be attached to the side committing the aggressive first act of violence.

Strategic defence represents the direct physical opposition to strategic attack, i.e. attack on the population, industry, and other central assets of a country.

What is 'Strategic Deterrence'?

The Oxford International Dictionary (1959) defines 'deter' as 'to restrain from acting or proceeding by *any* consideration of danger or trouble.' 'Deterrence' is 'preventing by fear.' Since nuclear weapons can wreak frightful damage, anyone contemplating an action which might bring them down on his head will be deterred from the action, for fear of its consequences. Deterrence can operate below the strategic nuclear level, as it did in the case of the non-use of chemical weapons in the Second World War. Strategic deterrence refers to the threat of using nuclear weapons against the central assets of the opponent. It is possible to have strategic deterrence without having strategic defence.

What is 'Strategic Stability'?

A state of strategic stability exists between two adversaries if neither has a rational motive to strike first with his nuclear weapons. In a crisis, each would calculate that a first strike by him would provoke retaliation on a scale he could not bear. A subsidiary criterion for crisis stability is that the system be proof against accidental initiation. A corollary to this crisis stability is armament stability, which refers to the constructing and deployment, rather than the actual use, of new weapon systems. Acquisition of new weapons by one side that motivates the other to acquire new offsetting weapons is destabilizing in this sense.

How Does Strategic Defence Affect Strategic Deterrence and Strategic Stability?

Bilateral strategic deterrence exists if both sides possess sufficient offensive weapons to be able to inflict unbearable damage to the other's national assets. In the absence of effective strategic defence this would not require very many nuclear weapons. For the sake of discussion, let us assume that fifty well-placed nuclear explosions on cities would be unbearable. Taking account of technical unserviceability and malfunctions in operation, perhaps one hundred weapons would be needed to ensure accurate delivery of fifty.

However, such a balance could be dangerously unstable. Suppose that a portion of the one hundred weapons were directed against the opponents' weapons and their control systems in a surprise (counterforce) attack, instead of against his cities. If these targeted weapons and their controls were defenceless and vulnerable, the recipient of the first strike might lose his ability to retaliate. The effectiveness of such a first strike could be much enhanced by multiplying factors allowing one attacking missile or bomber to destroy several of the opponent's missiles or bombers. Under these circumstances one, or perhaps both, of the adversaries would have a logical incentive to be the first to strike, and the situation would be unstable.

There are three ways to avoid such an unstable situation. One is to have so many offensive weapons that a number is sure to survive that will be sufficient to enable the delivery of unbearable retaliation. Another escape is to reduce the vulnerability of the weapons intended for retaliation to the point that one attacking weapon will not be able to destroy on the average as many as one targetted weapon. The third way is to provide strategic defence, able to intercept and destroy the incoming weapons and thus preserve the retaliatory capability. A fourth remedy could be to set the weapons on a hair-trigger response, able to be launched in a retaliatory second strike during the few minutes between receipt of warnings and impact of the incoming warheads. This measure would, however, be destabilizing, since it would create a danger that war could occur due to an accidental launching, a malfunction of the warning system, or a mistaken assessment of information.

The policies behind START rule out the first solution (that of the safety of large numbers). Reduction in the number of strategic offensive weapons works against the stability of deterrence, although the planned reduction to 1600 weapons of specified categories on each side should not in itself be sufficiently radical to endanger stability. But it leaves the preservation of stable deterrence in the future, when offensive weapons may become many fewer in number but with a greater counterforce capability, dependent on reduced vulnerability and/or effective strategic defence of the retaliatory system.

There is an important interaction between strategic defence and the vulnerability of the retaliatory system that is not directly related to the interception of the incoming warheads. This is the provision of reliable early warning, which can be used for a number of useful purposes (but not including hair-trigger response). Key personnel can be alerted, alternate command posts can be manned, and aircraft can be flown off from their bases. Less tangible, but nonetheless significant, is the stabilizing effect in a crisis of being able to count on reliable warning that can be weighed against rumours and fears of hostile activity. It may be very important to be sure that the opponent is *not* doing something that could signal the beginning of an attack.

However, if technically possible, strategic defence could be provided for the protection of centres of population and industry as well as (or even instead of) strategic offensive weapons and their control systems. Perhaps it could even be provided for all or a large part of a whole country. Such a deployment would affect strategic deterrence in a way very different from defence of the retaliatory system only. In the limit (most unlikely to be either physically or economically possible, despite the hopes of former President Reagan) a strategic nuclear attack might be totally defeated by the defences. To the extent that one side possessed a near-perfect defence, the other would have lost its deterrent, and would be at a severe disadvantage in a military confrontation. If both had nearly perfect strategic defences, there would be no strategic nuclear deterrence.

The opponents of what they delight in calling 'MAD' (Mutual Assured Destruction) would be pleased to see the end of mutual strategic nuclear deterrence, as this would remove the threat of national nuclear annihilation. But they have not as yet offered a solution to the threats that would still be faced from tactical nuclear weapons, chemical and biological weapons, and from conventional war. No longer deterred by the strategic nuclear threat, conventional wars would likely be won by the side with the largest and best-equipped armies, navies, and air forces, all vastly more expensive than strategic nuclear weapons, and armed with weapons able to wreak destruction on a vast scale, although not as quickly as could be done with strategic nuclear weapons.

The Situation at the End of the 1980s

In 1989 the two Superpowers possess very powerful strategic offensive forces, and reliable systems to warn of attack. Even taking account of the vulnerabilities of the present offensive forces and the very limited capabilities of the present defensive forces to intercept attacking missiles and bombers, there is no doubt that a surprise attack directed against the offensive forces of either side could *not* destroy enough of them to prevent unbearable retaliation against the cities and industry of the original attacker. In other words, we have a state of strategic deterrence today, and it is crisis stable. In fact, it is so crisis-stable as to be ineffective for the deterrence of threats less than those of the most serious magnitude.

The situation is less clear as regards armament stability. The START negotiations have set themselves targets for substantial reductions of strategic offensive forces, aiming at equal levels well below those of 1988. This suggests the very opposite of a destabilizing arms race. But START is confined to offensive nuclear weapons deployed today. Both the Soviet Union and the United States are pursuing research on strategic defensive systems and on antisatellite weapons. It could lead to deployments that would endanger strategic stability or stimulate expensive and dangerous counter-deployments.

Defence Against Strategic Bombers

Non-nuclear strategic offence and strategic defence were first practised in the First World War, and on a much larger scale in the Second World War, in contests between bomber aircraft and air defence systems. The combined effects of antiaircraft guns, searchlights, barrage balloons, and fighter aircraft, greatly aided in the Second World War by ground-based and airborne radar and proximity-fused AA shells, exacted painful attrition on the bomber forces, but in general 'the bomber always got through.'[1]

However, even with the help of radio navigation aids, airborne bombing radar, and electronic countermeasures, the results of the prodigious strategic bombing efforts of the Second World War turned out to be far less decisive than had been expected.[2]

Between 1945 and 1989, heavy bomber aircraft have acquired intercontinental range (aided by air-to-air refuelling), increased speed (including supersonic dash for the latest versions), higher ceilings, increased payload, and highly developed equipment for electronic warfare. But their greatest acquisitions have been nuclear warheads and air-to-surface missiles. Strategic air defences have seen guns replaced by surface-to-air missiles, supersonic all-weather interceptors with long-range air-to-air missiles, and look-down shoot-down systems, better ground radar (including very long-range over-the-horizon radar), and AWACS. Speed and high altitude are no longer adequate to get the bomber past modern air defences, but low altitude flight, ECM, and standoff air-to-surface missiles, including some used for defence suppression, will probably allow most of the intended targets to be hit, albeit not without losing some of the bombers.

The long-range air-launched cruise missile offers a new challenge to air defences, more difficult than the bomber. The ALCM is much smaller and will fly lower. It is doubtful that current interceptor aircraft or SAMs will be able to engage it. Stealth technology will reduce the radar echo and the infrared radiation from both bomber and missile, thus making both detection and homing more difficult and countermeasures more likely to succeed.

The continuing stability of deterrence depends more on reliable warning than on active defence, and although cruise missiles and even a small number of bombers might be able to evade detection, it seems probable that warning would be obtained of the approach of any sizeable number of large bomber aircraft.

Defence Against ICBMs[3]

It is much easier to detect a ballistic missile in flight than to intercept and destroy it. Radar can detect quite small objects at great distances as long as they are above its horizon, and infrared detectors mounted in orbiting satellites are able to sense the tremendous volume of heat radiated by the booster rockets used to launch ICBMs, SLBMs, and space vehicles.

However, before ballistic missiles achieved intercontinental range, and for several years after that, it was generally believed that no active defence against them could ever be accomplished. You could not hope to hit a bullet with another bullet. Then the power of nuclear explosives, without which an ICBM would never have been cost-effective, was employed to produce a defence against the ICBM. Instead of hitting the bullet with a bullet, we would incinerate it in a nuclear explosion. Antimissile rockets with nuclear warheads were designed by both Superpowers, but actual deployment was curtailed at 100 weapons around Moscow and 100 near Grand Forks, North Dakota. The ABM Treaty, signed in 1972, and a subsequent protocol signed in 1974, set the national limits at 100. Soon after their deployment the United States withdrew their ABM missiles and other components of the 'Safeguard' system, retaining only the Phased Array Radar at Grand Forks. The Soviets have retained and updated their ABM complex around Moscow.

In a situation where warning was reliable, but active defence absent, and perhaps impossible ever to make effective, the obvious strategy was to minimize the vulnerability of the offensive systems that could inflict retaliation for an attack, and to rely on deterrence instead of defence. In the judgment of many, this appears to be a satisfactory situation that we should be glad to perpetuate.

However, the advance of technology began to offer possibilities of destroying missiles in flight, not by the brute force of a huge nuclear explosion, but rather by the use of improved sensors and control systems, mounted in space vehicles, pop-up rockets and aircraft as well as on the ground, to direct non-nuclear kill mechanisms that might include directed energy beams, high explosive warheads, and high velocity solid fragments against the missiles, at several stages in their trajectory.

The United States intensified its programme to investigate these technologies in the Strategic Defence Initiative, commencing in 1983, and before this the

Soviet Union had been pursuing a very active programme which continues apace today. The ABM Treaty permits these programmes to conduct research, but as long as the treaty remains in force, the work must not be extended into development, testing, or deployment of active BMD.

Many objections are being raised against SDI, extending all the way from '*it* will not work and the money will be wasted'' to '*it* will work so well that stable deterrence will be lost''. The '*it*' is always a hypothetical deployed BMD system whose characteristics have been invented by the objector, for which no decision has been taken, and cannot be taken until knowledge has been acquired through the research programme that is SDI. What may occur, perhaps in the 1990s, is that SDI will identify some technologies that show considerable promise, but cannot be evaluated properly or used to design a workable system without proceeding to development and testing. At this point a decision would have to be faced, but the necessary decision would not be whether or not to deploy an operational system, but whether or not to renegotiate or abrogate the ABM Treaty and proceed to development and testing.

It is, of course possible, and intriguing, to speculate about whether this or that BMD system would be stabilizing or stabilizing, but it all depends on what the system is, and where it is deployed.

Defence Against Sea-Launched Strategic Missiles

The greatest sea-based strategic threat comes from the ballistic missiles (SLBMs) on nuclear-propelled submarines (SSBNs). This is using the word 'strategic' in the sense described earlier, referring to attack on the interior of the country. Of course submarines (of a different type) pose a threat to sea lines of communication, but for the purposes of this paper we do not include protection of the SLOC under the rubric of 'strategic defence.' Once launched, SLBMs resemble ICBMs in most respects, although they may have somewhat shorter range, inferior accuracy, fewer penetration aids, and less capability to fire precisely synchronized salvoes. Because their launchers can roam with the freedom of the seas, SLBMs offer a greater variety of trajectories than do ICBMs.

Although the Soviet Union has had nuclear-armed cruise missiles (SLCMs) at sea since 1962, it is probable that all deployed before 1987 were intended for tactical use against surface ships and submarines. The USN's Tomahawk, first deployed in 1983, has both strategic and tactical versions, and it seems probable that the Soviet SS-N-21 ('Sampson') and SS-NX-24 are intended as strategic weapons.

The ranges of these strategic SLCMs extend from 2500 to 4000 km, considerably less than those of ICBMs or SLBMs, and they can be launched from submarines or surface ships. Tomahawk and Sampson can be launched from torpedo tubes or from vertical launchers inside the hull of a surface ship, or outside the pressure hull of a submarine.

Once launched, SLCMs pose the same type of target to defences as do ALCMs, although they are likely to spend more of their trajectory over the sea, where they might be easier to track by airborne or spaceborne radar, though beyond the reach of land-based detectors or weapons.

Strategic defence against SSBNs before they launch their ballistic missiles, or against SSGNs or SSNs before they launch their land-attack cruise missiles, is likely to differ to the extent that the threatening submarines will be in different parts of the world. The SSBNs will probably exploit the long range of their SLBMs to patrol far from hostile shores, in areas where they will be difficult to detect, easy to defend. But SSGNs or SSNs bent on land attack with cruise missiles will be obliged to come somewhat closer to their targets, and even closer to the coast when the targets are far inland. This may make the submarines more accessible to attack, especially after the launch of their missiles, which, if detected early, could reveal the approximate position of the submarine.

Strategic Defence of the Soviet Union

The Soviet Union has always put great priority on defence, although it has been in the habit of categorizing as 'defensive' powerful forces which to outsiders appear more offensive than defensive. A preoccupation with defence is quite understandable for a nation which suffered invasion of most of its most valuable territory in both world wars, and felt itself surrounded by unfriendly powers after the Second World War. Annexation of Estonia, Latvia, Lithuania, Eastern Poland, Galicia, Bukovina, and Bessarabia in 1939, and key territory in Finland in 1940, was intended to keep Germany from the Soviet border. Following victory in 1945, the Soviets not only retained the lands seized in 1939 and 1940, but appropriated further territory from Germany, Czechoslovakia, and Japan. In addition, they established the buffer states of the Warsaw Pact and obliged Finland to be neutral.

Deployment of Soviet troops in the GDR, Poland, Czechoslovakia, Hungary and Mongolia, as well as along the borders of the Soviet Union itself, provides a strategic defence against actual invasion of the Soviet Union. But the buffers are not wide enough to prevent the delivery of nuclear weapons onto Soviet territory by Intermediate Range Nuclear Forces (INF), launched from Western European countries of the North Atlantic Alliance. The components of the NATO INF with sufficient range to reach the Soviet Union were GLCMs, Pershing II MRBMs, French SSBS IRBMs, British, French, and American SLBMs, and for many years (but no longer) British V-bombers. Of these the Soviets disliked the Pershing II and GLCM the most, and were prepared to trade a considerably larger number of their own LRINF (SS-20, SS-12, and SS-23) in order to have Pershing and GLCM withdrawn in the INF Treaty.

This leaves the strategic defence of the Soviet Union to face the intercontinental-range strategic offensive triad of the United States, plus British and French SLBMs and a few (18) French IRBMs. NATO possesses nuclear-capable aircraft able to reach Non-Soviet Warsaw Pact territory, but to achieve deep penetration of the Soviet Union would only be possible by the longest-range aircraft, with several air refuellings, or if provided with standoff air-to-surface missiles, which could be deployed in the 1990s.

The WP deploys extensive air defences, including heavy concentrations of SAMs and interceptor aircraft in Eastern Europe, more likely to be engaged against NATO fighter-bombers conducting conventional tactical rather than strategic nuclear operations. An attack by heavy bombers based in North America would probably approach Soviet territory from the north, and air defences are deployed against this possibility.

Against ballistic missile attack the Soviet Union has an extensive early warning system, including several types of ground-based radar, and also orbiting satellites able to detect the launching of large missiles. Apart from the ABM system that has been in the Moscow area since 1964, they probably have no other active defence against ballistic missiles deployed today. A concern in the West is that the widely deployed and highly sophisticated early warning systems may also possess the capability to control mobile active defence weapons that are being prepared in secret for a sudden surprise 'breakout'.

There is not much the Soviet Union can do today against NATO SSBNs at sea. The Soviets will continue to make their SSNs quieter, and might at some point be able to attach an SSN to a NATO SSBN as it leaves its base, trail it out to its patrol area, and be able to conduct an underwater duel on an even footing.

Most of the important strategic targets in the Soviet Union are too far from the sea to be very vulnerable to an attack by strategic SLCMs. An exception is the concentration of naval facilities in the Kola Peninsula and the shores of the White Sea. However, because the Northern Fleet is based in this area, and because the SSBNs patrol in nearby waters, the Barents Sea is the centre of concentrated antisubmarine defence and the Murmansk coast is provided with heavy air defence.

In the 1990s we can expect to see the Soviet Union maintain extensive air defences and to improve them to combat the B-1 and B-2 bombers and the advanced ALCM. It will also maintain heavy antisubmarine defences in the Kola area. What will happen in the area of ballistic missile defence is a great unknown, but with their consuming desire for defence we can be sure that the Soviet Union will continue to devote a major effort to research on BMD and will not hesitate to deploy an active system should they feel it to be in their interests.

Strategic Defence of Western Europe

Discussions of the defence of Western Europe introduce further different definitions of the word 'strategic.' The bilateral negotiations between the United States and the Soviet Union distinguished 'strategic forces' from 'intermediate range nuclear forces' (which had before this been called 'theatre nuclear weapons', or 'tactical nuclear weapons'), with the forces in Western Europe being intermediate range forces. To the Soviet Union, 'strategic' meant 'threatening the territory of the Soviet Union, and of the other negotiating party, the United States.' Western Europe (and Eastern Europe) were battlefields for tactical operations. Nuclear bombs falling on London, Bonn, or Paris (or Berlin, Prague, or Warsaw) were not strategic weapons. But one could imagine residents of these cities and their national authorities feeling that the threat was a strategic one for them.

It may be that flexible response would contain any hostilities in Europe at the conventional level, with most of the damage being done to military forces and those civilian personnel and facilities unfortunate enough to be located near the battlefields and their supply routes. There are not enough aircraft in Europe to mount the repeated thousand-bomber raids of the Second World War, so that the total damage done in a conventional war lasting no more than a few weeks is unlikely to approach that wreaked in the six years of the Second World War. Nuclear weapons could be used in a highly selective manner, sparing centres of population. But it does not seem realistic to analyze the 'strategic defence of Western Europe' as distinct from general defence against invasion and against air attack. The same methods would be tried whether the attacker was using conventional or nuclear weapons, but we can be sure that active defence of population targets against nuclear attack could not succeed.

An unknown factor that could come into prominence in Europe is the development of anti-tactical ballistic missiles (ATBM). It is conceivable that technology will allow systems to be designed able to intercept short-range ballistic missiles. The same systems could be very effective against aircraft. Such systems are likely to be very expensive, and deployment might have to be confined to a few key target groups, whether military assets or cities.

Strategic Defence of North America[4]

With no active defence against the ICBM or SLBM, there was little to be gained from active defence of North America against bomber aircraft for the purpose of limiting damage. The important objective was to assure that warning would be reliable, so that steps could be taken to ready the control system and flush bombers from their bases. Warning against ballistic missiles is assured as long as the infrared satellites and BMEWS radars are operational, but it is necessary to provide warning against the air-breathing threat as well. Undetected, bombers could lead a surprise attack against the warning sites, control systems, airfields, and missile complexes, especially when armed with accurate long-range ALCMs.

Reliable warning of attack by bombers or cruise missiles is rendered more difficult than warning of attack by ballistic missiles for two reasons. Detection can be delayed or prevented by flying at low altitude under or between the coverage of ground radars, and will become more difficult when 'stealth' technology has been applied to the aircraft and cruise missiles. And, assuming conditions of peacetime, it will be necessary to identify each aircraft in the civilian traffic.

While identification of innocent co-operating aircraft can usually be accomplished by the ground radar system, it is sometimes necessary to send up an interceptor to make visual contact. And, in case the target proves unfriendly, the interceptor had better be armed, and preferably accompanied by a second interceptor, in case of a sudden unexpected air-to-air attack by the intruder.

Long-range detection of bombers approaching over the Atlantic or Pacific Oceans should be greatly aided in the 1990s by over-the-horizon radar, although it may not be very effective for identification, and will not be able to operate reliably over the Arctic approaches.

Apart from the evident need for reliable warning against the air-breathing threat, what may be required in the 1990s for active defence in North America is not so clear. The danger of air-breathing attack by conventional weapons is far less serious for North America than for Europe. However, with the wide and deep-seated fear of nuclear war, the possibility of a conflict being confined to the use of conventional weapons must be faced. In this eventuality it is possible that ALCMs and SLCMs with conventional munitions could be used to attack key soft targets in North America, such as space launching facilities, air bases, and radar stations near the coast.

The mechanics of active defence against cruise missiles could take the form of interceptor aircraft with look-down shoot-down armament, operating under the control of AWACS. Perhaps more likely, in view of the probable short warning time, is point defence of a few crucial soft targets by SAMs or guns with a very high rate of fire, of the type used for naval defence against air and anti-ship missile attack.

As regards deployment of BMD in the 1990s, aside from the strategic considerations the state of technological knowledge sets a fairly stringent limit on what could reach the operational stage before the year 2000. The United States Office of Technology Assessment[5] identified as components possibly ready for deployment between 1995 and 2000 the following:

- battle management computers
- boost-phase surveillance and tracking satellites
- space-based interceptor carrier satellites (with small rocket weapons)
- ground-launched rocket-borne IR probe or satellite-borne IR sensors
- exo-atmospheric interceptors (ERIS)

To this one might add deployment of terminal defence similar to the Safeguard system of the 1970s, as is still in place around Moscow.

The defence feasible before 2000 would operate from space against boost and post-boost vehicles, and from the ground against re-entry vehicles. Kill mechanisms would be hit-to-kill rockets.

The more esoteric and spectacular forms of BMD, such as airborne optical systems, imaging radars, rail guns, particle beams, neutron discriminators, laser weapons, and space-based mirrors could not be ready for deployment in this century.

Strategic Defence in Canada[6]

It is more realistic to speak of strategic defence *in* Canada than *of* Canada. In a major strategic confrontation between NATO and the WP, the significance of Canadian geography lies in its location astride the routes of strategic attack from the Soviet Union to the United States (and vice versa), rather than on the presence of a large number of important strategic targets located in Canadian territory.

Because of our location, Canada is important for early warning of attack against North America by strategic missiles or bombers. Since the 1950s we have had a vital part to play against the bomber threat, always for warning (with the DEW line and the Mid-Canada line), and, although to a decreasing extent, for active defence. For warning of ICBM attack the United States sited its BMEWS radars in Alaska, Greenland, and Britain, and its Satellite Early Warning System detectors in space, so that Canadian territory has not been involved.

In the 1990s we can be sure that the North Warning System will play a vital part in NORAD's function of warning against the air-breathing threat, remembering that over-the-horizon radar cannot provide reliable cover over the Arctic approaches. The CF-18 interceptors will be important for identification, although there will not be enough of them to be available at all the Forward Operating Locations all of the time. The effectiveness of the North Warning System and the interceptors may be greatly improved by the contribution of AWACS. More participation by Canada, and use of Canadian bases would enhance the effectiveness of AWACS.

There are technical questions of great significance for defence against the air-breathing threat that may be answered in the 1990s. One is the effectiveness with which radar, infrared, laser, or other electro-optical sensors will be able to detect and track stealthy cruise missiles. The other is the capability of radar based in space to detect and track aircraft, whether flying over the sea or the land. Covering all of the Arctic (although not continuously), effective space-based radar would have immense advantages over a single narrow line of ground-based radars with limited range against low-flying targets.

While major deployments of BMD in North America are not very likely in the 1990s, we can speculate briefly on the possibilities that any deployments would require, or at least be rendered more effective by, location of installations on Canadian territory.

Of the four phases of the trajectory of an ICBM launched from the Soviet Union towards a target in the United States, the boost and the post-boost phases will be completed before the missile has left Europe (or Asia). Interception would probably have to be carried out by equipment already in orbit, subject to control exercised from the United States. The terminal phase will not begin until the warheads and decoys are close to their targets in the United States, but interception could require preliminary tracking, discrimination of decoys, and assignment of terminal defence equipment. Thus, what could be needed over Canada could be the operation of those components concerned with mid-course interception and with the preliminary stages of terminal defence.

If we confine ourselves to the 1990s, the product of SDI most likely to be available and relevant to mid-course or pre-terminal defence is the Exo-Atmosphere Interceptor (ERIS). ERIS is a rocket with an infrared seeker, cued by satellite-borne or rocket-borne IR sensors, and intended to home in on or collide with re-entry vehicles in late mid-course[4]. Political considerations aside, Canada would seem to offer the most useful latitudes for the siting of some of these missiles, together with their control systems.

The Airborne Optical System, likely to be used for the early stage of terminal defence, is thought not to be sufficiently mature to be deployed before 2000. But if it ever should be, a logical area for the aircraft to operate would be over the northern United States and southern Canada.

Terminal defence, and to a lesser degree mid-course defence, is associated with particular identifiable targets. If these should all be crucial components of the retaliatory system, and not include major population centres, then the deployment should not be open to the accusation of destabilizing nuclear deterrence.

We might ask ourselves, if there is some kind of deployment, what would the Canadian participation be? If it's mid-course, or early terminal defence, there is little doubt that Canadian territory would be quite important. Perhaps the rocket-bourne interceptor would be the one to be used. If it's terminal defence, probably the weapons would be on the ground in the United States, but any kind of preparatory treatment, such as decoy discrimination and early warning would probably have to be done over Canada. So the technological situation suggests to us that if there ever is a kind of ballistic missile defence deployed, whether Canada has any part to play in it or not would depend primarily on what kind of system it is. Those are the only two kinds that would lead to Canadian participation, and it doesn't look as if it will happen for quite a long time.

Notes

1 Between September 1939 and May 1945, RAF Bomber Command made over 373 000 operational sorties. Of these, over 10 000 failed to return, 2.2 per cent listed as missing, and 0.5 per cent known to have crashed. The worst loss rates were encountered between April 1943 and February 1944, amounting to 4.6 per cent, mostly missing from operations at night. See Max Hastings, *Bomber Command* (New York: Dial Press, 1979). Appendix A. A flier subjected to a 2.7 per cent probability of failing to return from each of 30 sorties would have a probability of 44 per cent of returning from all thirty.

2 There has been much controversy over the wisdom of the R.A.F.'s campaign of 'area bombing' of industrial targets. Expectations of winning the war without invasion of Europe were clearly unrealistic, and it has been estimated that German armaments production was reduced by only 10 per cent in 1943 and 20 per cent in 1944: Dudley Saward, *Bomber Harris* (London: Sphere 1984), Chapter 24. However, aircraft production was shifted from bombers to fighters, nearly a million army personnel were employed in antiaircraft units, and war production had been badly cut by 1945, especially of oil. See also Charles Messenger, *Bomber Harris* (New York: St. Martins, 1984), Chapter 11; Lee Kennett, *A History of Strategic Bombing*, (New York: Scribner's, 1982), Chapter 11; Solly Zuckerman, *From Apes to Warlords*, (London: Hamish Hamilton, 1978), Appendix 6. The latter emphasizes the effect of bombing on transportation and steel as well as oil, and for support of ground operations.

3 United States Office of Technology Assessment, *Strategic Defense: Ballistic Missile Defense Technologies, Anti-Satellite Weapons, Countermeasures, and Arms Control* (Princeton: 1986).

4 An earlier C.I.S.S. publication on this topic is G.R. Lindsey, *The Strategic Defence of North America* (Toronto: Canadian Institute of Strategic Studies 1986).

5 United States Office of Technology Assessment, *SDI: Technology, Survivability, and Software* (Washington: 1987), Chapter 3.

6 See David Cox, *Trends in Continental Defence: A Canadian Perspective* (Ottawa: Canadian Institute for International Peace and Security 1986).

FORUM

Colonel Tony Sosnkowski

After this very interesting, stimulating and complete presentation, I am sure there are a number of points that you will want to make in clarification, perhaps even in disputation.

Dr Kenneth Hilbourne, University of Western Ontario

It seems to me fairly obvious that if warning of enemy strategic attack is reliable, then a policy of launch-on-warning would be stabilizing rather than destabilizing: stabilizing because it would make a first strike by the enemy clearly pointless. Is it possible that technology can provide a genuinely reliable warning of enemy strategic attack, so that a policy of launch-on-warning would become prudent and stabilizing?

Dr George Lindsey

If one defines stability in the way that I did, you don't want to take any chance at all of a war by accident. In the past, technical failures of detection systems, or more often, conflicting evidence because something unforeseen has happened, have started the process that might cause retaliation. It has always been stopped long before we ever got to the point of feeling that we were under attack. I think that is such a good situation that there is every reason to preserve it.

I suspect that the answer to your question, logically, would be that you probably could devise a system that would be technically so nearly perfect that the chance of a mistake was negligible. But I think people would still worry about it to the point where they would be upset. And you don't want people upset. You want them to feel confident so that when rumours come in you can say 'My warning system says it's all right, and we are not going to do anything until the warning system says it's wrong, and even *then* we are not going to do anything until we are actually hit, because our weapons are so invulnerable, and our control system is so certain to survive that they'll be sorry.' It doesn't really matter whether they are sorry in 20 minutes or an hour and 20 minutes, or even 20 days, just as long as they realize that they are going to be ruined. I don't think we would be wise to ever rely on launch-on-warning.

In spite of some of the things that are said in newspapers and written by inventive novelists, we are not in a launch-on-warning mode today, neither in Europe or in North America, and we never have been. We got closest to it in the early days when bombers were terribly vulnerable and they really could be wiped out in the event of a surprise attack. The reaction then was to launch them in the air to go to a control point, but never to do that until the final signals came — a 'failsafe' system. Because of human considerations, the unexpected can occur, but you don't want the unexpected to result in the world being destroyed. You cannot take any chance *at all*.

Dr James Finan

I agree. From my perspective, launch-on warning and launch-through-attack are precisely the things you want to avoid because they are essentially forced responses in the face of insufficient decision-making resources such as time and information. As Dr Lindsey has pointed out, you want to be technologically in a situation where you never have to make that kind of a decision. That is, in effect, the essence of deterrence.

Commander Robin Cornell, Directorate of Military Strategy, NDHQ

I would like to hear you address the subject of fixed underwater detection systems, specifically in the Arctic — the capability in some manner to establish underwater surveillance in that area. I would like to hear Dr Lindsey address it from the point of view of technological feasibility, and the extent to which we as a country have or have not the capacity to do this, either unilaterally or bilaterally. I would like to hear Dr Finan address it from the point of view of stability. Is a greater amount of transparency of submarine operations in the interests of stability? Is the information which would come from greater transparency, in the hands of a third power, even one as closely allied to one of the Superpowers as we are, a stabilizing or destabilizing feature?

Dr Lindsey

I think the most important aspect of strategic nuclear deterrence at sea lies with the SLBMs. The Soviet submarines that carry those are not going to come into the Canadian part of the Arctic. They can stay back in the Soviet part. For stability, I would say we should wish them good luck and not harass them so they won't feel that they have to fire their missiles.

The other case where there could be a strategic attack on North America from the sea would be with cruise missiles. As I pointed out, they would probably have to come close enough to North America to leave the Arctic; they would probably have to come through the GIUK gap or through the waters of the Canadian archipelago. I think that is very much a secondary threat compared to the SLBM.

But the main reason to provide some kind of underwater surveillance in the Arctic is not against the strategic threat but against the threat to the sea lines of communication. There, the submarines have got to get out of the Arctic and into the Atlantic if they are going to do any harm to the sea lines. Their easiest route is through the GIUK gap. If we were able to make that virtually impenetrable, or to make undetectable passage impossible, there would be a strong incentive for Soviet submarines to try to come through the Canadian Arctic. So the ability to see them coming would be very important for NATO, but not so much for strategic defence as for protection of the sea lines.

As to whether it is technically possible, I think there is no doubt that the development of surveillance in deep water, the SOSUS system, has been so successful that something like that could be done in the Arctic. There would be technical difficulties. The operation under the ice is very different from in open water. The placing of the equipment on the bottom is more difficult because of the scouring of ice, and that sort of thing. But where there is a tremendous advantage for Canada is in the fact that geography provides narrow choke points through which submarines would have to come. I am sure it is not beyond the wit of man, even Canadian men, to block the narrow points. There you might use Sonar — that would be the most likely thing. Magnetic methods are conceivable. I think there is no doubt that we could put something across narrow passages.

As to whether we could have an active defence, is a more complicated question. There are possibilities there. The SSNs would have had a role to play there — but we're not going to get those!

Underwater surveillance in the Arctic is both necessary and possible, but not so much for the strategic threat as for the SLOC threat.

Cdr Corneil

Perhaps I should elaborate on my question. I wasn't thinking so much along the lines of surveillance of choke points, which is one of the things that has been talked about, but of things which have not yet been addressed publicly, such as the possibility of surveillance of the deep basin, which would, in effect render the Arctic a more transparent area from the point of view of submarine operations. I am not talking about just the immediate area around the Canadian sector of the Arctic. I am asking if there is a technological capability of rendering the entire deep basin area, including the adjacent continental shelves, more transparent using fixed systems?

Dr Lindsey

It would be difficult and very expensive to do, and I am not sure that the need is enough to warrant such an effort. I can see partial moves. I think things could be dangled beneath the ice quite cheaply and allow considerable areas to be surveyed. But to cover that whole ocean would be terribly expensive. I'm not sure that we want to make it all that more transparent. It seems to me that strategic stability depends very much on submarines being invulnerable. Maybe it is a good thing to leave them invulnerable.

Dr Finan

I have nothing to add to that. That is a complete answer from my point of view.

Mr Arthur Mathewson

My question has to do with the debate that has waxed and waned over the SDI since 1983. It has been argued that an impermeable shield would be a destabilizing development, while a permeable one would be stabilizing. Some of us who have been listening to this debate have been bemused and confused by the arguments. Can you help clarify this?

Dr Finan

From my own point of view, the whole issue of SDI is at a number of levels. For the general populace, SDI is, in a moral sense and a physical sense, more satisfying than deterrence, and I think part of the impetus for it comes from that direction. I think people began to think of what deterrence meant in terms of their own protection: it meant that if it failed, someone else would be incinerated after they had been incinerated. That was pretty unsatisfying, and in that context SDI began to make sense. It makes sense to me in that context too, as one of the potential victims of incineration.

The problem that I have with SDI, in whatever form, is if the political environment between the Superpowers doesn't change, how do you get from where we are to that condition without seriously challenging the equilibrium in the central strategic relationship? You can model a situation where that party to the relationship who is being disadvantaged comes to a point when it has the option either to use what is has in some kind of offensive strategic way, or to recognize that after that point it will be clearly strategically disadvantaged, and may not be in a position politically to pursue its national interests with effectiveness. The issue for me is the problem of stability and the process of transition. In that sense I see SDI as something that would have to be done with a great deal of care. I think it has considerable capacity for destabilizing the existing equilibrium which is at present pretty stable.

Dr Lindsay

The speculation about what would happen with an impermeable system is very intriguing from a philosophical point of view, but I think the possibility of it happening is so small that it is an academic exercise and not a practical one. There is, however, a real practical interest in considering what some sort of limited ballistic missile defence system might achieve. If it were used as a point defence of assets needed for assured destruction or preservation of the control system, then it would be highly stabilizing. If whatever system you deployed was purely to defend cities, then it would be destabilizing. Most of the people who don't like SDI say *it* will produce some terrible system. But what's the 'it'? We don't know. There's not much point attacking something that doesn't exist and whose characteristic is unknown. There is one sort of partial ballistic defence that might be stabilizing and another that might be destabilizing. But at the moment we haven't got either kind, and we won't have it for quite a long time.

Mr John Toogood

My question is very much on the same topic: the idea of a point defence of some kind or other as the only practical manifestation of SDI. Would you carry your thoughts further? I am very unclear in my own mind about what I think about this. The ABM Treaty, as we all know it, gave us a system of total vulnerability on each side. An SDI that worked 100 per cent perfectly would give us the concept of 100 per cent protection on each side. What happens if you have a little bit of SDI in the form of some point defence? Have you improved on the protective strategy of the ABM Treaty? How does this become an *increase* in stability?

Dr Finan

I guess the answer would be 'that depends'! My problem with it is this: I can conceive of situations where some level of SDI deployment, if it were asymmetrical, could create a situation where one of the parties to the deterrent relationship could say that the combination of defensive and offensive capabilities would make them believe that the capacity to deliver unacceptable damage, which is ultimately the essence of stable central deterrence, could be put in question. If that were to occur, then you can argue logically that you have some serious problems with SDI. But Dr Lindsey is correct in saying that the kinds of technologies that would be involved are a long way off in the future, and so this is very much an academic exercise. Nevertheless it has to be considered.

Dr Lindsay

You asked whether point defence would be stabilizing or destabilizing. It depends where the point is. But you also asked whether the disappearance of the ABM Treaty would be destabilizing. I think it would be, unless it were replaced by a modified ABM Treaty, which I think would happen. If both sides wanted to deploy a partial defence which they felt was reasonably stabilizing, I think they would rewrite the ABM Treaty to make that kind of development acceptable, but to prevent the kind of development they didn't want. They cannot do very much without abrogating the ABM Treaty the way it is now.

Brigadier Maurice Tugwell

I would like to turn the last question upside down. Is there in the panel's view any serious danger that the Soviets, given their accurate intercontinental missiles and the lack of an American mobile land-based deterrent, given the absence at present of any ballistic defence for the land-based deterrent, given alleged improvements in Soviet submarine technology which might enable them to track the underwater leg of the American deterrent, might see the possibility of first strike resulting in sufficient damage to United States capability that what could be thrown back would no longer be an unacceptable amount of damage? In other words, they might risk a first strike given some ten year period in which they might improve their capabilities while the West leaves things as they are. Or is that just fantasy?

Dr Finan

All of these things are theoretical. From my own work I would say that you can, given Soviet developments now in place and under way, develop a model which would sustain the kind of argument that you are making — not in the near term, but on the horizon. Those are the kinds of technological changes that I was talking about when I suggested that perhaps if we do not engage in more arms control exercises designed to get at those kinds of problems, we could find ourselves in a position where launch-on-warning and launch-through-attack might become something that we would be driven to. I think it is a not unreasonable set of considerations. You can certainly put together quite plausible models on that basis.

Dr Lindsey

Your assumptions included the Soviets doing a lot of things and our side doing nothing. If that went on long enough we would find ourselves in a bind. We must realize that we have a satisfactory state of mutual stable deterrence, but we have to work at it to keep it stable. It is like modernization of weapons. We cannot leave them for years and expect them to be just as good as new. Certain measures, such as building the B-1 and the B-2, and perhaps having Midgetman and MX on mobile platforms, are efforts to keep the present satisfactory stable balance stable. It is not going to stay stable if one side does a lot of things and the other side doesn't do anything. It is quite wrong for people who don't like defence expenditures to say that since we have deterrence we don't need to spend another nickel. Unfortunately, you do have to spend another nickel from time to time to keep it stable. And we *must* do it.

Dr Finan

That's absolutely right. Brigadier Tugwell, you have brought up my concern when I talked about the Gorbachev revolution. Deterrence is something that has to be continuously managed, and I am concerned that there is perhaps more optimism about the so-called Gorbachev revolution than is warranted. We are dealing not with a man but with a system and that system has been in place for a long time. We should clearly take every advantage that is available to us to get what concessions we can in order to make the relationship more stable and more lasting. But we must be careful not to get involved in an unwarranted euphoria about what we think is going to happen in the future. Some of the optimism that I see is overdrawn. We must not forget that the deterrent relationship still has to be managed in a very serious way.

General Colin Curleigh

Dr Finan: you went from the general statement of your presentation, which is the utility of nuclear weapons, to an even more general concern, the utility of war itself. I would like to bring that back to the question of the *military* utility of nuclear weapons, particularly the so-called battlefield or tactical nuclear weapons that could be used in central Europe. My concern is, given the increasing effectiveness of conventional weapons, their accuracy and their destructive capability, given the difficulties of an integrated nuclear and conventional battle in a large and complex theatre such as central Europe, and given that even the initial use of low yield so-called tactical nuclear weapons would still be crossing the threshold with a high probability of escalation to the general nuclear war you mentioned, and perhaps most important, given the (unlikely) possibility of timely release of sufficient tactical nuclear weapons to influence the battle, particularly in a rapidly deteriorating situation — with all those givens, what are your views of the military utility of nuclear weapons?

Dr Finan

I guess I would not make a distinction: the military utility is the deterrence utility of nuclear weapons. We are talking about two kinds of credibility: technological credibility and political credibility. We can have all of the instruments that we require to operationalize the strategy of flexible response, but if we do not have political will, the political determination to look at the information in a realistic and timely way and make decisions about use, then we are in trouble. That is obvious, but because it is so hard to get a handle on that, we tend to infer political credibility from kinds of technological deployment. If that is true, it is very important to have deployed the full range of both conventional and nuclear forces in the escalation ladder. If you start to have gaps and holes, then I believe you will have serious problems about both technological and political credibility, and at that point you have to question the military credibility of the doctrine of deterrence.

General Curleigh

Your conclusion seems to be, then, that they are primarily political weapons. What I am asking is do you think those nuclear weapons now in place in Europe could ever be used to influence a battle?

Dr Finan

Certainly. I think the Soviets, more than we do, have a sense that nuclear weapons, particularly battlefield nuclear weapons, can be used for purely military effect, and in very effective ways. Imagine the use of those kinds of weapons against concentrations of armour, for example. There is no question that they could be militarily very effective. But I don't think that that is the way we in the West tend to see them. If we find the policy of nuclear deterrence credible, we have to see them as links in a chain going to general nuclear war. For me, that's a good thing, because if you are a rational decision-maker and you recognize that that is going to happen, then at the ultimate level, politics becomes the extension of war by other means. But gaps at lower levels can be dangerous.

Dr Lindsey

I think you also have to ask, would we be better off without the middle rungs of the ladder. If we haven't got the will to use small nuclear weapons in a disaster, have we got the will to use big ones? If the other side knows that we haven't, then deterrence would not work.

It may not work. Perhaps once you start the escalation, it will go right to the top. Maybe you can't reintroduce deterrence. All those things are possible. But it's also possible, and I think very likely, that the whole prospect will frighten the other people so much that we won't have a war at all, and that's what we want. So I think the middle rungs have to be kept in place, although one admits that they might not work.

Dr Finan

One thing we do know: with all the political credibility in the world, you cannot run deterrence without nuclear weapons. That's why it is very important that the technological requirements be in place because from the technological requirements I think you can sensibly infer political intent. That's most important in terms of the overall credibility of the system.

General George Bell

This question may be premature in terms of the timing of the day. But as you have given us an analysis of SDI and ADI, my question is what should the priorities in Canadian strategic analysis and development be to deal with this? Should the priorities be underwater and anti-cruise missiles, space, or ABM defences? What should we in Canada be deriving from your analysis?

Dr Lindsey

My two candidates would be space-based radar to observe aircraft in flight and, if possible, cruise missiles in flight, and underwater surveillance to make sure that passage through the choke points in the Canadian archipelago cannot go undetected. Those would be good places to put our priorities to start with.

RALPH J. LYSYSHYN

THE NUCLEAR NON-PROLIFERATION RÉGIME: TODAY AND INTO THE 1990S

General Larose

Good afternoon, ladies and gentlemen. This afternoon, we will start off with 'The Nuclear Non-Proliferation Régime.' The unequal triangle of Soviet, NATO and Chinese nuclear forces may become less stable. India and Israel may soon pull things out of shape. Argentina, Brazil, Iraq, Libya, Pakistan and South Africa may also become declared nuclear powers in the 1990s. Will deterrence postures and arms control régimes be influenced by the emerging nuclear powers? If so, how?

We are most fortunate to have Mr Ralph Lysyshyn, director of the Arms Control and Disarmament Division of the Department of External Affairs, with us. Since 1972, Mr Lysyshyn has served in Moscow, Lagos and Washington.

Mr Lysyshyn

I have this habit of getting into disagreements with everybody I encounter in public forums. I am going to get into a disagreement with all three previous speakers on the discussion of deterrence before I go into my own topic.

It seems to me that we missed the point in the discussion of deterrence. Dr

Steinberg talked about why deterrence doesn't work. Dr Lindsey and Dr Finan told her it did. But the point is that we have never been completely dependent just on deterrence. In fact, NATO policy, the policy that we have practised and is described by the Harmel Doctrine, is a policy of mixed deterrence and reassurance. On our side at least, we have continually worked, in dealing with the East, to reassure them that our intentions are not all hostile. I think that the reason we have had peace for 40 years in Europe is not just because deterrence works, and it's not, as Dr Steinberg would have us believe, that we have been lucky. It is because we have dealt with the problem with a mixture of both deterrence and reassurance, whether through arms control proposals, arms control agreements, other proposals ranging from Eisenhower's early 'Open Skies' to chemical weapons moratoria to other techniques to provide reassurance. When we discuss deterrence, we should make sure that we do not isolate it and make it either the be all and end all or to suggest, as Dr Steinberg did, that we have been lucky.

Having disagreed with the three first speakers, I will now proceed to disagree with the Institute.

In the letter the Institute sent to my Director General, inviting the Department of External Affairs to participate in this conference, we were asked to talk about the possible impact of proliferation on strategic arms control in the 1990s. It is my intention to take advantage of the prerogative of the speaker to change the topic somewhat. I believe that the problem that needs addressing is larger and more complex than the challenge set out in the Institute's letter. Certainly, the subject implied by the title, 'Proliferation in a Multilateral World,' is much larger and more nuanced than the question of the impact of proliferation on strategic arms control.

The problem I have with the way the Institute delineated its topic is that basically you can answer and resolve the issue in one or two sentences. The first sentence would say, having one or two or three of the threshold states declare themselves nuclear is unlikely to affect the strategic arms control régime that is likely for the 90s. The second sentence would be equally simple, and it would say that the emergence of several new nuclear weapon states would simply write an end to the currently emerging arms control régime — strategic, tactical and conventional.

The way I would like to approach the issue, if I may, is to argue that the threat is not simply proliferation, but also the possible collapse of the essential Nuclear Non-Proliferation Treaty (NPT). Indeed, the threat to arms control from the possible collapse of the Non-Proliferation Treaty is perhaps even greater than it is from limited proliferation. The threat from the collapse of the Non-Proliferation Treaty exists, whether or not actual proliferation takes place as a result. The second point that I would like to alter with regard to the described topic is that the impact of the collapse of the NPT or proliferation will be felt, not only on strategic arms control, but on all arms control.

As we gather today, a week-long meeting is taking place in New York of the Preparatory Commission for the Fourth Review Conference of the NPT. Now I know it's not fashionable in institutes and academic circles that bring together 'strategic' thinkers to talk about multilateral arms control, but the fact is that the NPT is *the* essential, fundamental arms control agreement. Without it, we cannot expect to make progress on other areas of arms control. Additionally, I would contend that as we move to a less bipolar, more multilateral world, the relative importance of the NPT for maintaining stability will increase. Not only is the NPT often underestimated, it is misunderstood, intentionally misinterpreted, and under threat. I will come back to deal with the NPT, but first let me talk about how I see the world emerging in the 1990s.

In talking to the conference organizers, I was asked to speculate a little on the kind of strategic arms control régime we are likely to see in the 1990s. Being a good, cautious bureaucrat, I said, 'What! In public?' On reflection, however, I noted that I was being asked to speculate, rather than predict. That gives me a little more leeway.

The drift away from a bipolar world to a multilateral world has clearly been going on for the last 30 years. The relative decline of the Superpowers, brought about by the recovery of Europe after the war, and the emergence of new nations with the end of colonialism, have, for the most of this period, been the engines of this move towards greater multilateralism.

However, the changes we have seen in the Soviet Union in the last four years have significantly altered the way we look at Superpower relations and have hastened the move away from a bipolar world. We are now able to speculate credibly on a fundamentally different East-West relationship than we have seen for the last 40 years. The public, as evidenced by the polls, very clearly believes that the Cold War is over. In a world where East-West confrontation no longer dominates and overshadows everything else, the regional military balances and regional arms control will play a far greater role in stability and security. In this context proliferation and the NPT will play a far greater role then they do today. I include the NPT because the collapse of, or withdrawal from the NPT, is an explicit threat of proliferation that is likely to have much the same impact on stability as proliferation itself.

We are not talking about tomorrow, but neither are we talking about an unreal far-off distant future.

Speakers who are given to high flights of rhetoric like to talk about the need to come down from the 'nuclear mountain.' It is not an entirely inapt metaphor, and I would like to make use of it myself today. Essentially, we spent close to 40 years getting to the top of this mountain. The arms control challenge we face is to get ourselves down safely, and everyone knows you cannot go safely down a mountain in a helter-skelter fashion. You have to work your way down. The challenge we face in the 90s is to work our way down that mountain as far as we can, and as fast as we can while maintaining security and stability.

In the area of strategic arms control the United States and the Soviet Union have already agreed in principle to 50 per cent reductions. At the end of the Reagan Administration we were left with essentially four problems outstanding preventing that agreement: first, the relationship of offensive reductions to strategic defence; second, the issue of mobile missiles; third, the problem of sea-launched cruise missiles; and fourth, counting rules for air-launched cruise missiles and bombers. We have already seen the American strategic review essentially remove the problem of mobile ICBMs with the American decision to pursue the development of their own mobile missile.

Recent arms control consultations that we have had with both the United States and the Soviet Union indicate to us that both sides assume that they will reach an arms control agreement during this term of office for President Bush. This, of course, takes us into the early 1990s and implementation of this agreement will probably take five to seven years. This already takes us to the late 90s. However, if the current changes in the Soviet Union and improved relations between East and West continue, I can well imagine us making progress and beginning negotiations on the second agreement within that time-frame. That is, however, a very conditioned 'if.' Six years ago it would have been hard to predict what the East-West relationship would look like in 1989, so it is similarly dangerous to predict what it will look like in 1995 and beyond. We all have our view of what we would want it to look like, but that may not be possible to achieve.

In any case, at the level of the second strategic arms agreement, or perhaps more likely at the level of a third one somewhere into the next century, we clearly will have come to the point where the strategic nuclear arms of nations other than the Superpowers will have come into play.

In the age of large Superpower arsenals, the emergence of two or three new nuclear weapons states is unlikely to impact greatly on these negotiations. Proliferators at that level are unlikely to build more than a few nuclear weapons. The emergence of such proliferators will have profound impact on their regions, but is, I would argue, unlikely to affect the fundamental negotiations between the United States and the Soviet Union as they are likely to proceed through the 90s. At best, these negotiations are likely to lead to some kind of concept of minimal deterrence at several hundred strategic weapons for each of the Superpowers. Proliferators would likely find themselves facing the censure of both the East and the West.

While such proliferation is unlikely to affect strategic nuclear arms control, it could seriously affect future negotiations on tactical nuclear weapons. Additional nuclear weapons states would provide strong arguments to the militaries of both the Superpowers that they need flexible, tactical nuclear weapons arsenals in order to defend their allies in those regions where nuclear weapons have been newly introduced. Similarly, any hopes of conventional arms control in regions outside of Europe would be seriously undermined by the emergence of any new nuclear weapons states.

I said earlier that all bets on arms control are off should we find that we have extensive proliferation. What I am dealing with here is, of course, the premise that we are unlikely to have broad proliferation, except in a circumstance where there is a broad and profound breakdown of the international order as we now know it. It would involve a reversal of a significant order of magnitude of current trends. We are dealing with a hypothetical situation and I am not sure that this is, at this time, a valuable exercise.

Earlier, I raised the issue of the Non-Proliferation Treaty. If you imagine the nuclear weapon issue, if not resolved, then under firm control in the East and West context, you can then appreciate that the threat to stability is going to come from regional issues and regional problems. And here both proliferation and the threat of proliferation become destabilizing factors.

The reason the NPT's importance is underestimated is largely because the Treaty is often misunderstood. This misunderstanding is the result, essentially, of attacks by critics of the agreement. This isn't so much a misinformation campaign as a misdirection campaign. The critics of the agreement, including particularly the major non-signatories, dislike the Treaty because they say it is discriminatory. It gives nuclear weapons states a monopoly on nuclear weapons, a perpetual monopoly. In order to achieve the Treaty the nuclear weapons states agreed within the terms of the agreement to pursue negotiations in good faith on effective measures relating to the cessation of the nuclear arms race at an early date and to nuclear disarmament. This is the famous Article VI.

The commitment, it should be noted, was to pursue negotiations in good faith. Much discussion we hear of this Article suggests that the commitment is to actual nuclear disarmament. In addition, in discussions of the Non-Proliferation Treaty, we hear a lot about the Comprehensive Test Ban Treaty with many arguing that 'such a ban is the only way to give the NPT a secure future. If the United States and Britain reject the ban, the NPT, one of the most important and successful treaties of the nuclear age, may be in serious danger when it comes up for renewal in 1995.' (*Globe and Mail*, 20 April 1989)

The test ban appears in the preface of the Treaty, and again the undertaking is to seek to achieve an end to tests, and to continue negotiations to this end.

These undertakings to continue negotiation were important to achieving the NPT Treaty. There is no doubt of that. They have also been the focus of much of the debate in the NPT Review Conferences. It is also true that it is reasonable to pressure the nuclear weapons states on this score to achieve results.

This should not, however, be confused with the essence of the treaty, which is, after all, a commitment to non-proliferation. It is the Non-Proliferation Treaty; it is not the nuclear arms reduction treaty. The essential element remains non-proliferation, the undertaking of the nuclear weapons states not to circumvent their agreements, or to additionally threaten each other by giving nuclear weapons to their friends and allies. In a multilateral world, the other essential undertaking is even more important, that is, the other signatories promise not to develop nuclear weapons on their own in order to threaten their neighbours. This undertaking is the result of an explicit recognition that the introduction of nuclear weapons into a region will seriously undermine the likelihood of maintaining regional stability and security. If, in a changed strategic situation, regional problems become the most important, this undertaking takes on added importance.

There have always been from the beginning, a small number of nations who have not accepted the fundamental premise of the NPT, calling it, as I noted earlier, discriminatory. They have, over time, become more and more uncomfortable with their refusal to sign the agreement, especially as they have become fewer in number and as political pressure has built up. It has been in their interest to focus attention on the arms reduction and CTB aspects of the treaty to justify their non-signature. In this, they have been actively abetted by NGOs and individuals who see in the treaty an opportunity to try and leverage the nuclear weapons states to reduce their nuclear weapons. This is, I think, fair ball, as long as perspective is maintained. To threaten the NPT, or to undermine it, in the name of promoting reductions, strikes me as 'throwing the baby out with the bathwater.'

Should the NPT begin to unravel, even if no actual proliferation takes place, it is hard to imagine arms control régimes being developed in the absence of some replacement for the NPT. It strikes me that the nuclear non-proliferation undertaking is the essential element of the future of arms control.

As part of the campaign to undermine the NPT, we have recently seen much publicity about the PTBT, the Partial Test Ban Treaty Amendment Conference. Now the argument is being made that 'without a total test ban even deep cuts would be almost meaningless.' This argument claims that the latest weapons are more dangerous and destabilizing than the old ones. Indeed many experts would argue the opposite, that the recently developed submarine-launched ballistic missiles and mobile ballistic missiles contribute to enhanced stability.

What I find particularly worrying is that we have already seen the beginning of an attempt to tie the future of the Non-Proliferation Treaty to a successful outcome to this PTBT Amendment Conference. It is an attempt to say that arms reductions and non-proliferation are less important and should be dependent on a test ban. I personally have a lot of trouble with that concept.

In focusing on the threats of proliferation to arms control we should not try and limit ourselves to looking at only one aspect of arms control. The threats of proliferation to arms control are the same whether we are talking strategic arms control, tactical arms control, conventional arms control, chemical arms control, regional arms control or global. During our consultations with the Soviet Union, they made the point that it is perhaps unrealistic to expect broad signature of a chemical weapons treaty while there are many non-signatories to the NPT. Many nations going nuclear might not provoke their neighbours to go nuclear but might provoke them to go chemical and will certainly make them reluctant to engage in conventional arms control.

The second point I have is that the threat to arms control comes not just from actual proliferation, but from serious threats of proliferation, and the major factor here could be the unraveling of the Non-Proliferation Treaty. It strikes me as in no nation's interest to withdraw from the NPT just because the Soviet Union and the United States have 12 000 nuclear weapons rather than 6000. And yet many nations are threatening to do that. I suspect their neighbours will say, 'You did not withdraw because the Soviet Union and the United States have 12 000 nuclear weapons; you withdrew because you intend to proliferate.' Any withdrawals from the Non-Proliferation Treaty, any unraveling of the NPT, could be extremely destabilizing and very dangerous for arms control.

PAUL BUTEUX

DETERRENCE POSTURES IN THE 1990S

General Larose

Thank you very much, Mr Lysyshyn.

Now we are going to go on with 'Deterrence Postures in the 1990s.' Cruise missiles? Stealth bombers? Mobile ICBMs? The technological developments of the 1990s may be matched only by the arms control régimes and strategic defences. If stability is to be preserved in an atmosphere of innovation and reductions, how will the new forces be balanced?

Dr Paul Buteux is director of the Programme in Strategic Studies in the Department of Political Studies, University of Manitoba. Professor Buteux has been a contributor in the past to CISS seminars, and we are indeed proud to welcome him again. His current research is in European perspectives on NATO and European security and their implications for Canada, as well as the implications of the modernization of British and French nuclear forces. It would appear that this presentation is timely in the context of his research and will be to our collective benefit.

Dr Buteux

My topic is a broad one, and I propose to restrict my remarks primarily to problems of deterrence as they affect the United States and NATO. Looking ahead to the next decade, it seems to me that the bilateral United States-Soviet strategic relationship of mutual deterrence is relatively unproblematic. It is highly unlikely that any outcomes of Soviet-American strategic arms control negotiations will alter the fundamental character of that strategic relationship, or that either side will be in a position to do by its unilateral actions. I discount, therefore, such initiatives as SDI. Where important political and strategic issues arise is in the area of the United States commitment to its allies in Europe and in the continued credibility and political viability of extended deterrence.

Since 1967, the strategic concept of flexible response has provided the strategic rationale for the American extended deterrent commitment. Flexible response has served two important political purposes: first, it has been a means by which the risks of the United States nuclear commitment have been made politically acceptable to Americans; and secondly, it has been a means by which European allies have been assured that their security is coupled to the American strategic deterrent.

As such, flexible response has always contained a fundamental element of contradiction. On the one hand, it has provided the Americans with the possibility of choice about the use of nuclear weapons in the event of war in Europe. The concept is basically an escalatory one that provides United States presidents with at least the possibility of using nuclear weapons in the defence of Western Europe without immediately invoking the unacceptable prospect of a central nuclear exchange with the Soviet Union. On the other hand, flexible response has been understood by many in Europe, and especially by the Germans, as a means of generating in the mind of the adversary the fear that in the event of conflict in Europe strategic nuclear weapons might be used. Thus the object of most European governments has been to tie the possibility of strategic nuclear use as closely as possible to the Alliance's overall strategic posture.

As I have argued elsewhere,[1] the essential ambiguity of flexible response is that it is a formula that serves two sets of conflicting interests and rests on two competing theories of deterrence. Thus, on the one side, deterrence is held to be enhanced by the apparent ability to use and control force at levels short of complete catastrophe; on the other side, deterrence is held to reside in the prospect that once war broke out there would be a very great risk that uncontrollable escalation would take place. The former theory better serves American interests in NATO than does the latter, which is closer to the view of deterrence held by many European governments.

The deterrent posture that NATO has adopted in order to implement its strategic concept is based on the oft-stated triad of conventional defence, theatre, and strategic nuclear forces. Taken together, these forces are supposed to provide for a 'seamless web' of deterrence that meets the Alliance's security needs and which is at the same time politically acceptable to allied governments.

Now, however, a number of developments have called into question this politically comfortable and seemingly effective arrangement. Four areas of change in particular are worthy of note. First, the growing 'nuclear allergy' in Europe that is calling into question the legitimacy of defence policies based upon strategies of nuclear deterrence. Secondly, the question of whether flexible response can be sustained as a credible basis for deterrence in the post-INF environment. Here, the combination of the possibility of further arms control agreements covering nuclear weapons in Europe and the proposed modernization of the nuclear arsenal will do much to determine the answer to this question. Thirdly, the manner in which East-West relations develop must be considered; and, finally, the likely political evolution of the Alliance will also be significant.

How these four areas of change work out will have crucial effects on NATO's deterrent posture in the 1990s. With respect to the political legitimacy of defence based on nuclear deterrence, what happens in the Federal Republic is likely to be decisive in terms of the options facing the Alliance. Already, it has been recognized that no major changes in the Alliance's nuclear posture can be contemplated prior to the next federal election in Germany. What is less well recognized, however, is the degree of consensus on the nuclear issue that has emerged among the mainstream political parties in the Federal Republic. Basically, this may be summarized as limiting nuclear weapons in Germany to the lowest possible level through negotiations with the Soviet Union; the indefinite postponement of any modernization of the Alliance's short-range nuclear forces (SNF), and the redefinition of what the Alliance requires in order to achieve its security needs in the so-called 'comprehensive concept.' Agreement on the comprehensive concept is supposed to be the centre-piece of the NATO summit in May.

But, as recent NATO meetings have revealed, many differences exist between the allies as to the urgency of modernization and the timing and role of SNF arms control negotiations. The British and the Americans have resisted opening up further nuclear arms control in Europe until a chemical weapons treaty has been concluded and the objectives of the conventional arms talks in Vienna have been reached: that is, an agreement on a secure and stable balance of conventional forces in Europe at lower levels than now exist. The Germans and others, on the other hand, have broken away from the tenuous compromise on arms control and modernization reached at the June 1987 NATO Council meeting in Reykjavik. By responding favourably to Warsaw Pact proposals for immediate negotiations on remaining nuclear weapons in Europe, the German and other allied governments are responding to the political imperative of avoiding the kinds of turmoil that accompanied earlier modernization decisions.

It is clear that under current circumstances Alliance agreement in the post-INF environment on any programme of modernization that could be perceived as an 'end-run' around the INF Treaty is simply politically impossible. The unfolding of the INF issue from the NATO 'two track' decision in 1979 until the signing of the treaty eliminating intermediate-range missiles globally in 1987, has undermined the shift in NATO's nuclear posture presaged by the 'two-track' decision itself and by the Montebello meeting of the Nuclear Planning Group in 1983. In the late 1970s, NATO began to move towards a deterrent posture in Europe that placed greater emphasis on longer-range weapons that could threaten targets deep in Warsaw Pact territory, including that of the Soviet Union. In 1985, following the programme initiated at Montebello, SACEUR presented his Nuclear Weapons Requirement Study to the NPG. The INF Treaty effectively reversed this trend, and many of the current modernization proposals may be interpreted as efforts at ameliorating the strategic consequences for NATO.

The politics of nuclear weapons in Germany and elsewhere in Europe make it likely that NATO will have to base its deterrent posture on a minimum number of nuclear weapons deployed on the continent in support of the Central Front. Longer-range forces will have to be deployed off shore, or in the United Kingdom. Such a development will simply underline the historic role of Britain as the European 'aircraft carrier' for long-range nuclear forces in Europe. As such, the implications of a future shift in the political composition of the British government should be borne in mind. As well, even under the present government, there must arise doubts as to how willing the British will be to incur the risk of hosting additional United States weapons in order to back up a European strategy that the British government does not support. In any case, it seems clear that the Alliance's deterrent posture will probably be based on far fewer weapons than has been the case in the past. Already, with the elimination of the INF, the Alliance's arsenal will be about half the size of what it was in the late 1960s, and this trend towards fewer weapons can be expected to continue. Not the least of the consequences of this will be far fewer targeting options available to SACEUR. One important function of the large variety of targeting options that has been available in the past is to cover up the lack of agreement on when, how, and under what circumstances nuclear weapons would be used in defence of the Alliance.[2] It can be expected that the problems of reconciling different allied views in such documents as the 'General Political Guidelines for the Employment of Nuclear Weapons in the Defence of NATO,' adopted at the Gleneagles meeting of the NPG in 1986, will be even more difficult than it has been in the past.

Obviously, a key to the future of deterrence in Europe in the 1990s will be the outcome of arms control. In my view, unless there are major changes in Soviet policy, coupled with a greatly increased sense of threat on the part of Western Europe, it is going to be virtually impossible to keep SNF off the arms control agenda. Even the possibility of a 'third zero' is a real one. It should be remembered that present Soviet policy under Gorbachev is rooted in a long-standing Soviet policy option of seeking a 'nuclear-free' Europe. Now, political circumstances are such that this objective is finding a sympathetic constituency in the West. Chancellor Kohl's statement of April 27 leaves him with little room for compromise on this issue.

The modernization of NATO's nuclear arsenal is thus already hostage to the outcome of arms control. Even if the Anglo-American position were to prevail in the Alliance, and SNF negotiations were postponed until substantive outcomes emerged on the conventional side, the link between modernization and arms control is still established. Now, however, it is doubtful if the 'two-track' precedent can be followed. This would involve a commitment to the deployment of modern short-range missiles in Germany while at the same time offering to negotiate an arms control deal on them. The time for such an initiative may well be past. In fact, tactically, it might be better for the Alliance to offer instead negotiations on equal numbers, with the right subsequently to modernize those systems that remain.

Given these political restraints, it can be asked what kinds of modernization might be possible? Attention has been directed particularly to a follow-on system for the Lance, but new nuclear artillery shells and new stand-off systems for dual-capable aircraft are in the works as well. Clearly, a successor to the Lance is proving to be the most difficult question to resolve, both because of German sensitivities and because such a system is crucial to a deterrent posture compatible with the strategic concept of flexible response. Also, whatever decision is made about the Lance successor, it will have implications for what happens to nuclear artillery and to stand-off systems for aircraft. This will be so for two reasons: first, because the Soviet Union will attempt to link a deal on short-range missiles with other theatre nuclear systems; and, secondly, because the future role of SNF in the Alliance's nuclear posture will determine the role of other systems as well.

The kind of modernization posture for the 1990s that would be compatible with the appearance, if not the operational viability, of flexible response is reasonably clear. It would involve modernized, but fewer, artillery shells; new stand-off weapons for aircraft to increase their effective range and penetrability; and a Lance follow-on. It is assumed that the SLBM commitment to SACEUR would remain, although not necessarily at the currently quoted figure of 400 warheads, and that as long as they are not eliminated in a strategic arms control agreement, some numbers of SLCMs would be available to cover targets in the European theatre.

Various estimates have been put forward of the numbers of warheads in the various categories that would be required to retain the operational credibility of flexible response. Hans Binnendijk's figures for the lower end of targeting requirements have plausibility,[3] but it should be noted that these estimates, and others that have been made, envisage a far larger number of SNF than the 88 launchers that currently exist. It is difficult to see how either the Germans or the Russians could be persuaded to accept a deployment on this scale. If modernized SNF are deployed in the 1990s, the number of warheads, based on the present number of launchers, and assuming two missiles per launcher, will be closer to 200, rather to the much larger numbers suggested as meeting the current operational requirements of flexible response.[4] And this figure, not counting reloads, would be far greater than the 88 warheads that, currently, could be launched at short notice. Again, the political feasibility of deployments on this scale is questionable.

What all this implies is that it is very likely that the Alliance's posture in the 1990s will be heavily biased towards aircraft and systems at sea. Even assuming that some nuclear artillery deployments remain (and without some SNF this is a large assumption), the Alliance's ability to construct targeting options between limited 'demonstrative' use and employment in accordance with SACEUR's full 'Priority Strike Programme' will be greatly constrained. Indeed, such a posture, in my view, plausibly could not be said to be compatible with flexible response. NATO's deterrent posture would be that of 'minimum' deterrence, but one in which the Alliance would have forces capable neither of 'controlled' escalation in accordance with the war-fighting version of flexible response, nor possess forces capable of providing a politically credible link with the United States strategic deterrent. The pretence that NATO might threaten first use would disappear. Essentially, the posture would be one premised on the existence of what some have called 'existential' deterrence: the idea that as long as nuclear weapons are present in an environment, adversaries are deterred from threatening or resorting to force through the fear that something might go wrong and nuclear weapons be used despite the complete irrationality of doing so.

The political and strategic consequences of a shift away from flexible response will be in large part a function of the two remaining factors of change identified above. That is, the evolution of East-West relations and the parallel political evolution of the Alliance itself. A continuation of the trend towards the re-emergence of a pan-European political system, marked by substantial progress on conventional and nuclear arms control in Europe, would provide the political underpinnings for an Alliance posture of 'minimum, existential deterrence.' Under these circumstances, we would be witnessing the emergence of a European 'security régime' premised on expectations of peaceful change. This would not downgrade the importance of the military balance to Western security. Rather, at the conventional level it would enhance it, but the balance between defence and deterrence would be altered in favour of the former. At the same time, this would underscore yet again the ability and willingness of the NATO allies to provide for conventional defences that are adequate for the strategy adopted.

A key problem in the event of the emergence of a European security régime would be the consequences of one side or the other defecting from it, or, alternatively, if key actors on either side defected. The result of such defections could well be a sudden and, from the point of view of stability, a dangerous drop in the level of international security for all concerned. It is considerations like these that enjoin caution on Western leaders in their approach to arms control and to the further development of their relations with the Soviet Union and Eastern Europe.

With respect to the vulnerability of the allies to defection from a European security régime, the special geostrategic position should be noted not only of Canada and the United States, but also of the special position occupied by France and Britain as nuclear powers. Already, past developments in the strategic balance have enhanced the political and strategic significance of the French and British deterrents, and the independent deterrents of these two countries would assume greater political and strategic significance in an Alliance posture that depended more than ever on 'existential deterrence.' Somewhat paradoxically, a development of this kind would tend to work against, rather than support, the emergence of a stronger West European defence identity.

Thus arises the final element of change that I suggest will determine NATO's deterrent posture in the 1990s — the political shape of the Alliance. Other than the unlikely event of the complete disengagement of the United States (and Canada?) from the Alliance, two broad possibilities exist. These may be categorized as either a continuation of what can be termed an 'integrated' Alliance, or the emergence of one based on a distinctly 'two pillar' concept.

As long as the United States maintains its extended deterrent commitment, whether based on the strategic concept of flexible response or not, and as long as the United States continues to function as Alliance hegemon, then the Alliance will persist in 'integrated' form. By this is meant not only the persistence of the integrated military command structure, but the continued exercise of American political and strategic leadership. This leadership, typically, is exercised by the taking of policy initiatives and by the attempt to build an Alliance consensus around them through the practice of consultation.

The current difficulties over SNF modernization are but one symptom of the relative shift of power within the Alliance as between the United States and the European allies. This shift in power, it should be noted, is political and economic rather than military in character. The relative decline in United States military power is largely a function of a shift in the military balance vis-à-vis the Soviet Union, and is not a consequence of relatively greater European defence efforts. Nonetheless, the shift in the 'distribution of capabilities' across the Alliance helps explain the current resistance to United States military and strategic initiatives that in my view is unprecedented. There are two aspects to this. First, in the past, allies have tended to resist United States policy initiatives that they do not like by failing to implement agreed policy according to American wishes; now, however, outright refusal to pay lip-service to American preferences is occurring. Secondly, it is the Germans who are taking the lead in this resistance.

The politics of Alliance strategy have changed as a result of all this. The building of a new consensus around Alliance strategy for the 1990s will be possible only on the basis of a defence and security agenda that is established much more by the Europeans than has been the case in the past. An effective deterrence posture in the 1990s will have to reflect structural changes in the Alliance and the emergence of an incipient pan-European security régime.

This notion of structural change draws attention to the fashionable concept of a 'two pillar' Alliance in which there exists a more 'equal' and 'independent' balance between the North American and European wings of NATO. (I gloss over the implications for Canada of being integrated into a 'North American' pillar.) Such a development implies a considerable degree of devolution in Alliance responsibilities. Devolution has both American and European advocates, but, for all the talk of a greater European defence identity, it is the potential American version of a changed transatlantic security relationship that is of greatest significance.

Only the United States is in a position to fundamentally alter NATO strategy by unilateral action. Ultimately, it is the United States that will determine the character of its nuclear guarantee. Given American dissatisfactions on the political and economic fronts of the Alliance relationship, those in the United States calling for change in the burdens of the Alliance are likely to find sympathetic responses among American decision-makers. As the extended deterrent has become more dangerous to the United States and less reliable to the Europeans, the existing NATO strategy of American nuclear deterrence bolstered by limited conventional defence has been undermined. Since it is beyond American resources and willingness to provide a full-fledged conventional defence in Europe, and given the unwillingness of the Europeans to provide that conventional defence for themselves, then, according to the advocates of devolution, the United States should abandon its protective role and simply become a supportive ally, albeit the most powerful one, in a more traditional and equal Alliance arrangement.[5] A development of this kind would imply a redefinition by the United States of its global interests and of the place of Western Europe within them. Also, it would be incompatible with extended deterrence on its present basis.

Whether or not devolution as outlined here takes place, and in my view this is less likely than the continuation of some form of an integrated Alliance, it is clear that the Alliance's deterrent posture will be very different in the 1990s from what it is at present. Not only will the nuclear arsenal be different, but the political and doctrinal underpinnings will be different as well. Some American advocates of devolution, such as Calleo, have argued that a revised transatlantic relationship will in fact encourage the development of a more cohesive and powerful European pillar in the Alliance; one in which the Europeans will bear a greater burden of conventional defence, in which French and British nuclear forces would cast at least a deterrence 'shadow' over Western Europe, and in which the American nuclear commitment would be of a more explicitly minimum kind.

Such views should be treated with caution. Not only are the institutional arrangements for a development of this kind not in place, but it is unclear whether any of the larger European allies would be prepared to move in this direction. Alignment on foreign policy towards the Soviet Union and Eastern Europe is one thing, but the development of an integrated European defence identity is another. In particular, quite apart from the fact that the nuclear strategies of Britain and France set clear limits to their ability to co-operate in a European defence arrangement, the increasingly 'nationalist' position of the Federal Republic on security matters is a further limiting factor.

In the absence of unexpected and dramatic change in the European security system, or in the Soviet-American strategic relationship, and whatever the political shape of the Alliance, Western deterrence in the 1990s will be based on United States strategic forces increasingly decoupled from those of its forces deployed in Europe. In Europe itself, a smaller and less variegated arsenal of weapons will be available. The distribution of risks and commitments between the various allies will change, and the allies will have an increasing stake not merely in détente, but in the creation of a pan-European security system.

Notes

1 'The Political and Strategic Implications of the INF Treaty for NATO,' *Occasional Paper 3*, Programme in Strategic Studies, University of Manitoba, June 1988.

2 Ivo H. Daalder, 'NATO Nuclear Targeting and the INF Treaty,' *Journal of Strategic Studies*, 11/3, September 1988.

3 The numbers suggested, which are lower than what Binnendijk considers to be SACEUR's hypothetical requirements, are: stand-off missiles—800; gravity bombs—500; follow-on to *Lance*—400; artillery shells—300; total - 2000. See Hans Binnendijk, 'NATO's Nuclear Modernization Dilemma,' *Survival*, XXXI, 2, March/April 1989, 146.

4 *Loc cit.* Binnendijk's suggested figures for SACEUR's requirements are: stand-off missiles—800; gravity bombs—500; follow-on to *Lance*—900; artillery shells—800; total—3000. It should be noted that these estimates are simply illustrative, and should not be taken as representing actual targeting requirements.

5 A fully developed statement on this view can be found in David P. Calleo, *Beyond American Hegemony: The Future of the Atlantic Alliance* (New York: Basic Books 1987).

JOHN TOOGOOD

BANNING THE BOMB? THE FEASIBILITY OF NON-NUCLEAR DEFENCE

Larose

Ladies and gentlemen: our next presentation will be 'Banning the Bomb? The Feasibility of Non-Nuclear Deterrence.'

Nuclear deterrence works. The number of high-intensity multinational conflicts is far below that of the pre-nuclear era. However, if the world ever becomes nuclear-free, how do we deter aggressors? Could biological, chemical or high technology conventional weapons ever replace the hydrogen bomb?

Mr John Toogood, the Deputy Director of the Canadian Institute for International Peace and Security, has graciously accepted to address this subject.

John Toogood spent 34 years in the Navy. He spent 17 years at sea before moving on to staff positions in the National Defence College and its Royal Navy counterpart. At the conclusion of his service he was Director of Arms Control Policy at National Defence Headquarters.

Mr Toogood

It is forty-four years since the world entered the nuclear age and now, in 1989, strategists have become quite familiar with a range of concepts and theories and an entirely new lexicon has become routine. To experts, expressions like 'stability,' 'mutual assured destruction,' 'second strike' and a host of others convey immediate images of complex concepts. Prominent in this family is 'deterrence,' but unlike some other expressions 'deterrence' frequently attracts adjectives. To illustrate, in the course of preparing this paper I took some time to refresh my memory with some background reading. In one pamphlet, running about 15 pages, by an eminently respectable scholar, I found the following expressions:

- minimum deterrence
- finite deterrence
- extended deterrence
- functional finite deterrence
- expanded minimum deterrence
- and, if you are ready, existential deterrence.

I began to feel a bit uneasy about having agreed to speak. I considered the question 'Deterrence of what?' Confrontation? Aggression? Intra-war escalation? This line of thought naturally led to a quick check of Herman Kahn *On Escalation*': I had forgotten that there are 44 rungs on his ladder and one could conceivably consider the nature of a deterrent at each level.

Somewhat bemused I then wondered about deterrence of whom by whom: non-nuclear weapons state versus nuclear weapons state? Vice versa? Nuclear weapons states against each other? Superpower versus smaller nuclear weapons state? What about undeclared nuclear weapons states? And so on.

The arithmetical combinations inherent in these musings had clearly become large enough to justify a less than fully comprehensive paper and so with a clear conscience let me begin by setting out the parameters of the comments that follow.

I will first briefly discuss candidate systems to replace nuclear weapons as deterrents, then set limits for the 'deterrence of what?' question, survey a few typical 'who by whom' cases, and then draw some conclusions.

In the course of these remarks I will add two adjectival deterrences of my own to the list I mentioned a moment ago:

- 'renegade-only deterrent capability,' by which I mean a global level of nuclear weapons that is not militarily significant for any one state or alliance but in the aggregate is sufficient in type, quality and quantity to deter a renegade power; and
- 'self deterrence,' meaning a decision not to use nuclear weapons even when the risk of nuclear retaliation is non-existent or minimal.

One last introductory remark. This paper is *not* about the feasibility of a nuclear-weapons free world. That is a different matter altogether and as long as the Ghadaffis and Khomenis of this and future generations are around it would be foolish, in my view, for the more responsible states to divest themselves fully of all nuclear weapons — the weapons may be destroyed but the knowledge and technology cannot be disinvented.

To turn now to the options, I would submit that there are only two candidate systems to replace nuclear weapons as strategic deterrents: chemical weapons and some combination and level of conventional forces well equipped quantitatively and qualitatively with powerful modern weaponry.

Nuclear weapons are characterized by their capability to impose devastating punishment and destruction. We have all been horrified by the consequences of the release of deadly chemicals by accident (India) or design (Iraq) and chemical weapons have been characterized as the poor man's nuclear weapons. Moreover, there has recently emerged seemingly well founded concern about a proliferation of ballistic missiles with either conventional or chemical weapon warheads.

But the fact remains that for military and political purposes chemical weapons do not have anything like the potential for devastating punishment and destruction that characterizes nuclear weapons. Chemical weapons cannot, in my view, take on a strategic role to deter hostile strategic decisions to use conventional forces or nuclear weapons.

True, chemical weapons can be useful tactically in both combat and area denial roles but they remain too susceptible to weather conditions (rain, wind, temperature and humidity) to be compared with nuclear weapons' punishment and destruction potential. This deficiency is even more marked in the case of widespread applications. Thus I would concede that the threat to use chemical weapons can deter use of the same weapons by an adversary, but that is as far as I would go in any strategic context.

Deterrence with conventional weapons has been around since the first caveman decided that his neighbour's club was a little too big to risk a raid on his cave. The essence of the matter hasn't really changed since then although the factors to be taken into account have become vastly more complex. What is new in this century is the arrival of nuclear weapons causing the addition of the question 'But would he really use it?' to deterrence theory. And thus emerged what is now the well understood phenomenon of the role of ambiguity in strategic deterrence. But that is an aside. What must now be considered is the feasibility of conventional forces taking over the deterrent role of nuclear weapons.

Before carrying this discussion further there is a need to settle the 'Deterrence of what' question. For convenience and manageability I will henceforth consider only deterring the initiation of interstate warfare. This will admittedly mean that some aspects of the overall question will not be dealt with here, such as intra-war escalation, but I would submit that the fundamental deterrent strategy is the prevention of the outbreak of war in the first place.

There are five declared nuclear weapons states — the United States, the Soviet Union, France, the United Kingdom and China — and two military alliances. If asked, each of these actors would declare that its nuclear weapons capability is strictly for defensive deterrent purposes. A concrete assertion to this effect emerged from the first Reagan/Gorbachev summit at Geneva in 1985 when they jointly declared that 'a nuclear war cannot be won and must never be fought.' Inherent in that statement is an acceptance of forgoing prospects of victory in war if nuclear weapons are used. This is my first illustration of self deterrence: a characteristic inherent in the mere ownership of nuclear weapons.

I would now like to turn to a somewhat closer examination of each of the nuclear weapons states mentioned above and speculate on the consequences for each insofar as its deterrence strategy is concerned if its nuclear weapons ceased to exist above a token level sufficient only to control potential renegade third parties.

The United States nuclear capability is intended primarily to deter the Soviet Union. A unilateral abandonment of nuclear weapons would leave the United States strategically inferior and politically there would be just one military Superpower left. This option is so obviously absurd as to merit no further consideration here. Interestingly, though, the purely domestic physical security of the United States should not be much affected by negotiated drastic reductions of a bilateral nature with the Soviet Union. The United States' geographical position and its conventional forces remaining, though inferior in various ways to the Soviet Union's, would be adequate to deter the sole potential adversary given that it, too, would have reduced to the same level.

The same applies to the Soviet Union in every aspect as far as its posture vis-à-vis the United States is concerned, but the Soviets must add the remaining three nuclear powers into their equation, particularly at the shared border with China. It is apparent that Gorbachev is prepared to accept — indeed, highly desires — drastic reductions and restructuring of both nuclear and conventional forces. but there must come a point when a prudent Soviet decision-maker would have to insist that the British, French and Chinese join the reductions negotiations. I would not attempt to speculate on the level concerned but it would almost certainly be a function of Soviet perceptions of the nuclear arsenals of those three. At that point even if further Soviet/United States progress were possible on a bilateral basis the Soviets would have to demur so as not to place themselves in an inferior position in relation to the other three nuclear weapons states no matter how strong their conventional forces might be.

The circumstances of the United Kingdom are not dissimilar from those of the United States even though the latter has global responsibilities that give rise to the strategy of extended deterrence, a topic that I will address in a moment. Unlike the United States, though, the United Kingdom is somewhat less favourably situated geographically and there is no prospect whatever that its conventional forces could by themselves deter a Soviet attack on the homeland, unlikely though that may seem except in the context of a general European war. For the British, then, collective security is the only alternative to a national nuclear deterrent force even if the Soviets had only a token nuclear weapon capability. At this juncture the best means of collective security is NATO.

Unlike the British, whose nuclear deterrent is part of the NATO military structure, the French nuclear deterrent is entirely national in the lack of formal commitment to the Alliance. In other respects, however, the factors affecting the prospects for alternatives for France are pretty much the same as those for the United Kingdom, i.e., there is but one potential adversary and national deterrence with conventional forces only is not an option. Although the French will probably never admit it, NATO is their only military alternative to an independent nuclear deterrent at this time.

The Chinese situation is somewhat unique. They have demonstrated to the Soviets that they can probably inflict unacceptable counter-value penalties in a nuclear war and they do have quantitatively massive conventional forces. Like the United States, the Chinese could probably deter a Soviet attack if neither country had nuclear weapons above a token level. However the Chinese equation is more complex given the proximity of India and Japan as well as Taiwan. It is exceedingly difficult to speculate what the Chinese would accept in a five-power nuclear weapons reduction negotiation. It might be that before relying exclusively on conventional forces they would require satisfactory conventional controls on or reductions of the conventional forces of their neighbouring non-nuclear weapons powers — if one can characterize India as a NNWS. Given their already modest nuclear capability they could refuse any reductions at all pending the inauguration of this parallel régime.

To complete this survey, a word about extended deterrence. Here the feasibility of non-nuclear deterrence is more attractive. At present a protecting power can extend its deterrent capability to a client state in three ways:

- by accepting an obligation and stationing conventional forces and nuclear weapons on the soil of the client;
- by accepting an obligation and stationing conventional forces only;
- by accepting an obligation but stationing no forces of any kind.

It has been apparent for some time that no client could be absolutely certain that a protector would use nuclear weapons in its, the client's, security interest because of the risk to the protector of initiating a nuclear war. It was to counter this perception that NATO decided in December 1979 to commence the installation of U.S. controlled ground-launched missiles in Europe. This stationing, it was felt, was essential for the credibility of linkage to the United States strategic nuclear deterrent as a protection for Western Europe. Now that the intermediate weapons have been negotiated away, United States and Alliance spokespersons assert that American conventional forces in Europe are an adequate guarantee of the United States commitment, a negation of the justification given in 1979 for proceeding with a contentious new nuclear weapons programme.

It must be noted that at this time plenty of nuclear weapons of various kinds remain here and there throughout the world and hence so does nuclear deterrence. But if there were no nuclear weapons above a token level, would extended deterrence be feasible? My answer is that the guarantee would be strengthened because the protecting state would no longer have to fear nuclear weapons reprisals if it went to the aid of a client. As to the effectiveness of conventional deterrents, this would depend to a large degree on the comparative strengths and deployments of opposing forces. The most reliable posture between two potential adversaries would be for each to have strong defences and neither to have a particularly good offensive capability. Overall, I would venture a generalization that non-nuclear extended deterrence is feasible.

I can hardly discuss this subject in the abstract pretending that NATO's current problem over SNF does not exist. To me the reluctance of the United States to negotiate does not make much sense. The doctrine of flexible response rests on three pillars — strategic nuclear weapons, theatre nuclear weapons and conventional forces. It is important to balance these three carefully for purposes of defence, deterrence and stability and I cannot see logic in entering negotiations to reduce any two of them but not the third. Because of the need for stability and the close interrelationship between SNF and conventional forces I think it would have been wiser to agree to the Soviet proposal to include these forces on the CFE agenda so as to minimize the risk of SNF reductions getting too far ahead or behind agreement to reduce conventional forces, as happened with INF. But separate negotiations are better than none. I would invite you to consider that remark in the context of my more hypothetical observation that extended deterrence can be stronger in the absence of nuclear weapons.

I might also say that the so-called crisis within the Alliance is merely one more of the type of thing that happens when you have an alliance of 16 democratic countries, and one should not worry that the Alliance is going to split apart over this issue.

Just to digress for a moment, I think the fact that Canada has re-entered the business of taking positions on questions affecting nuclear weapons in Europe is to be commended. During the time that I was directly involved in these matters, our position more often than not was that questions of this kind should be resolved between the Europeans and the United States. The Canadian position was usually invisible, and it is gratifying to see that that is no longer the case.

Before moving to one or two concluding observations I would like to highlight a few of the salient points in the discussion I have offered so far for your consideration.

First, a nuclear-weapons-free world should not be a goal, if only because of the opportunity it would open for an irresponsible renegade.

Second, bilateral United States/Soviet negotiations can only go so far before the Soviets will have to insist on participation by others; the Chinese may then feel compelled to achieve a conventional arms control régime in their region before accepting nuclear weapon reductions in a five power negotiation.

And finally, the continuance of a robust and reliable North Atlantic Alliance will be essential for the United Kingdom and France to accept significant reductions.

The prospects for a renegade-only nuclear deterrence capability are clearly daunting. Moreover, should negotiations ever advance toward that level — whatever it might be — it is highly likely that some sort of multilateral custody or control arrangement would be necessary before nuclear weapons states would strip themselves to a level that was more or less inconsequential nationally.

But to close on a less pessimistic note, I made a passing reference earlier to self deterrence when I mentioned the now familiar statement that a nuclear war cannot be won. Self deterrence has also been in evidence in the various conflicts that all five NWS have engaged in at one time or another since acquiring the nuclear capability: none has reverted to the use of those weapons even when faced with military defeat.

I would also submit that the Chernobyl experience has probably reinforced the notion of self deterrence to a greater degree than many have so far appreciated, particularly if a potential user lies downwind from the intended target in the same region.

As a final note of optimism it is worth remembering that deterrence of any kind is not an end in itself. It is instead a creature of political relationships, an interim strategy of protection pending a political climate that makes it unnecessary. Who in the first half of this century would have imagined that traditional enemies in Western Europe would enjoy the comfortable commonality of interests that characterizes that region today? It is entirely possible, in my view, that political developments on a global scale may overtake the need for strategies of deterrence and even negotiated arms reductions.

That is the end of my prepared text.

Earlier this week, my Institute, the Canadian Institute for International Peace and Security, was pleased to have a dinner in honour of the NATO Secretary-General Manfred Woerner when he was in Ottawa. On the subject of political solution, which was also a notion introduced by Paul Buteux in his remarks, I brought with me the notes I made at that dinner of a couple of things that Mr Woerner said which I thought were apt.

He first set the scene by agreeing that the changes in the Soviet Union are both real and significant, and this means that in the future the tasks of NATO are going to become of a political nature, and Article II of the Treaty, the well known article, will receive much greater attention in the future than it has in the past. He then set out the future long-term goals after the year 2000 for NATO as threefold.

First of all, self-determination by all European states and freedom of movement among them. Second, human rights throughout Europe. Third, a global order. Throughout the period leading up to and presumably beyond the establishment of these goals, he thought that at least a minimum of United States conventional forces in Europe would be necessary.

He also told us his programme for what he thinks NATO should be doing now:

- to promote changes in East-West relations that are favourable to the West, we should promote *glasnost* and *perestroika* by maintaining the attractiveness of our own system as a goal for the Soviets to strive towards;
- we should continue and intensify the CSCE process;
- we should co-operate with the East, politically, economically, socially and economically;
- we should challenge the East with a comprehensive arms control concept;
- we should engage the East in efforts to solve global issues, such as chemical weapons, demographic problems, hunger, and environmental matters.

He noted that the contributions of NATO of all kinds are far more important than we Canadians appreciate.

FORUM

Mrs Margaret Hoddinott

Ladies and gentlemen, it is my pleasure to open the floor to questions. This is always one of the most interesting and challenging parts of our seminars, and I look forward to the first question.

Dr Kenneth Hilbourne, University of Western Ontario

If there were no nuclear weapons beyond a token level, would there not be constant suspicion that somebody was successfully cheating? In terms of the advantage to be gained, the incentive to cheat increases rather sharply as the level of publicly known weaponry declines. If you have, let us say, 2000 missiles, officially known, and conceal 200, that is a small advantage. But if there were only 20 missiles officially known and you concealed 200, you get an enormous advantage.

Nuclear weapons have made it possible for the first time in history to conceal in a small space a destructive potential sufficient to be decisive. This is one of the great changes introduced by nuclear weapons. Disarmament was relatively feasible in terms of inspection capabilities in the days when you needed large numbers of aircraft, large numbers of tanks, and so on, but with nuclear weapons the inspection problem becomes enormously greater because of the small space required to conceal these weapons. The geographical size of the countries concerned, and here I am thinking of the Soviet Union specifically, is too enormous surely for adequate inspection. Bombs and warheads could be concealed in too many different places, including abandoned mine shafts. I am not talking about bombs and warheads ready for immediate use, but ones that could be deployed very quickly and added to the operational arsenal.

Is there any solution to that problem?

Mr John Toogood

I don't know whether the incentive to cheat would increase. Certainly the consequences of successful cheating would become more severe, as you point out. But here we are talking about a different world. Today, for example, the Finns don't feel it is necessary to inspect the Swedes to make sure that the Swedes are not cheating. That is the kind of Europe that is envisaged if you ever could get down to the renegade only level. And that level would have multilateral controls on it anyway. This is an image of an unlikely future world that would be very different from the world we now know.

Secondly — and I don't pretend to know much about the manufacturing technology of nuclear weapons — but at present, I am reasonably sure, you cannot just start manufacturing nuclear weapons in your basement. The factory requirements are such that it is difficult to do without being seen to be doing it. It is a lot easier to steal one, or to acquire one in other ways.

Dr Hilbourne

I was not talking about manufacturing weapons, but about the concealment of weapons already in existence. We know the number of missiles deployed much more accurately than we know the exact number of warheads they may have stored away.

Mr Toogood

That's a very technical question, and I cannot answer it except to say that obviously there would have to be a very thorough inspection régime.

Dr Buteux

I don't want to get too hypothetical about a world largely nuclear-disarmed.

It seems to me that the minimum level would have to be based upon some kind of determination of what sort of assured destruction capability you would have. Historically, military staffs have envisaged some kind of conflict and the role that nuclear weapons would play in it. For example, back in the early 1950s, at the famous Greenwich meeting of the British Chiefs of Staff, they laid out what kind of nuclear arsenal would be necessary to serve deterrence purposes for Britain. Two principles operated. One was that the size of force should be significant enough to seriously hamper the adversary's (in this case, the Soviet

Union's) ability to continue fighting. Secondly, this should be done on a basis of attacking what would now be called military-industrial targets. I don't know of any nation (except, perhaps, the French) which has simply said 'We're going to wipe out people.' It has always been related, in some way or another, to affecting the military-industrial capacity to continue war. That is the basis of the strategic bombing tradition.

The British at that time established that this would mean the capacity to destroy 20 military-industrial targets in the Soviet Union. This was the level that was considered necessary.

As long as any state in a minimum deterrent assured destruction posture has a sufficient arsenal, and sufficient confidence in that arsenal, to attack its minimum assured destruction requirements, then I think that determines the level.

If that is your strategy, then you can tolerate a bit more cheating. Say the agreement is 200 or 300 weapons, you could tolerate 400. But I don't think you could tolerate 2000. So it would be somewhere in that range.

Mr Ralph Lysyshyn

In the kind of scenario the questioner outlined, of only a very few nuclear weapons held by some kind of joint organization, there is indeed a very high risk that one nation could gain a significant advantage by hiding 200 weapons. I agree that 200 weapons intentionally hidden in a non deployed mode would be almost impossible to verify. What you have to aim for, therefore, in building future security régimes is the kind of thing Paul Buteux was talking about: you leave your side with enough weapons so that the kind of arsenal that can be hidden is not militarily significant. Although the kind of scenario that John Toogood set out might be possible, we are still a long way from that.

Mr John Marteinson, Editor, Canadian Defence Quarterly

My question is directed to Dr Buteux.

Flexible response has been one of the central tenets of the Atlantic Alliance for many years, and your suggestion that it is becoming less so is obviously disturbing to a lot of people who believe that the Alliance will continue to be important militarily.

The central threat to flexible response at this point clearly is the complete turnaround that we appear to have seen in Germany from near total reliance on nuclear deterrence to prevent war to a position of virtual denial of nuclear deterrence. Would you comment on why we have seen this turnaround in Germany? Has it something to do with the phrase that John Toogood used: is it 'self-deterrence'? Or is it simply a desire to win the next election on the part of the CDU? Or is there something fundamental beyond that?

Dr Buteux

Let me just preface my comment with one remark. I think it needs to be understood that flexible response is not the only strategy that is compatible with extended deterrence. After all, in the history of the Alliance, there have been two others: one that was associated with the period of American monopoly; another that was associated with the period of massive retaliation. So in principle we can have a different kind of extended deterrent strategy or strategic concept. Flexible response in that sense is not the token of Alliance continuance.

With respect to Germany, I think it is a combination of developments that have very much more to do with German politics than they do with a change in strategic thinking.

First of all, German governments for some time, certainly going back to Schmidt, have emphasized the principle of non-singularity — that is, that the risks and burdens of the Alliance should be shared, and that in terms of nuclear risks, the Germans should not be in a unique position. They have used the impact of the INF Treaty to say that all that is left now are weapons on German territory designed to kill Germans. In one way that is a specious argument. There are more magatons in the United Kingdom than there are in Germany, and there are other NATO allies with nuclear weapons on their soil.

In terms of German politics, one has to draw a distinction between short-range events and long-term needs. Short range, Chancellor Kohl is in trouble. His coalition is falling apart. One major element in the coalition has lost its leader. The death of Franz Josef Strauss, whatever you may have thought of him, has removed an important figure from German politics. Can anybody here tell me the name of his successor as head of the CSU? Of course, Genscher is playing his own game. So we have the tactical problems of Kohl involved with the nuclear issue. Genscher and the FDP are *perhaps* positioning themselves to do a deal with the SPD and exclude the Greens, and so on. That is the short-range set of circumstances, which will presumably change in one way or another after the next election.

However, there are longer trends which I don't think are going to change. I made reference in my remarks to the increasing nationalism of German security policies. The Germans are not the good Europeans that they used to be in the past, and they have a distinctly nationalist agenda. That agenda is focused upon not so much ostpolitik as upon Deutschland politik. The German commitment to the re-emergence of a pan-European political system extends right across the political spectrum — there is not a party in Germany that is opposed to that; it is the base from which German politics now operate. This determination to create what I call a European security régime is, I think, now a given of German politics. The ideas that were first formulated by the SPD in the late 1950s have become the mainstream in the debate about Germany's position in Europe right across the board, including the CSU. I don't think this is self deterrence as such, because I don't think the Germans have walked out — *yet*. A nuclear deterrence posture that will hold together either militarily or politically, whatever that posture is, will have to be compatible with this development that has been going on for some years but is now very apparent, where the Germans have a distinct political security agenda for Europe as a whole, and they are prepared, as much as possible, to go it alone on that.

Mr Lysyshyn

I have a bit of trouble with the concept that the Germans are no longer good Europeans. I can accept that only if you define 'good Europeans' as being willing to have the nuclear war fought only on their territory. I think we are seeing something in Germany that goes beyond expediency for the next election. I agreed with you earlier when you said that there is a consensus built around this issue in Germany, and in the position that Chancellor Kohl has taken. It is comfortable to dismiss this as Genscherism. I don't think it is. I think it is much broader than that, and that it is something that the Alliance will have to deal with. The German situation is different from the United Kingdom. Even though they both have nuclear weapons on their territory, the weapons in Germany, if used, would still fall on German territory, whether it is West Germany or East Germany. In the past, perhaps due to the memory of the Second World War, perhaps due to the very real nature of the threat, West Germany was willing to accept that. But given the passage of time, given the change in the Soviet threat, they are now turning to the Alliance to find a better way of doing this, and we have to try to find one.

Mr Arthur Mathewson

In his remarks Mr. Lysyshyn did not manage to persuade me that the non-proliferation régime was as fundamental to arms control as he asserts it is. I would be grateful if he would lay out some reasons why this is so, or if he would direct my attention to some writings that would serve the same purpose.

I would also like to say to Dr Buteux that this business of change in the German attitude is one that did not occur just the other day. The German government has been very concerned about what they call 'collateral measures.' This was introduced during the negotiation of the NATO position in the INF negotiations. It was perfectly clear, even in the early days of those negotiations and discussions within the NATO family, that this was very important to them indeed. What we are seeing now is simply the consequence of their concern being brought out into the public.

Mr Lysyshyn

I have a bit of trouble dealing with this because it seems to me to be almost self-evident that the NPT, or a non-proliferation undertaking, is essential to arms control. I think you have to ask yourself some questions. Would the Soviet Union be prepared to enter a conventional arms control agreement in Europe if Germany was not bound by a non-proliferation undertaking? There is the question I raised about the Middle East. Can you imagine neighbours of Israel signing a chemical weapons treaty or a conventional weapons treaty of any kind with Israel if Israel still maintains the right to go nuclear at any time? Once you start building out from one arms control régime to the next, it will be very difficult unless you have undertakings of that kind. I do not think that the Soviet Union would sign a treaty with the United States without an undertaking from the United States that it would not give nuclear weapons to Turkey, Greece, Italy, or whoever of its allies. You could debate whether or not the existing non-proliferation régime is essential. Maybe you can devise a better one. I don't rule that out. But if this one collapses at the review conference next year or in five years, we are not going to have another one ready very quickly to take its place. So we are far better off saving the one we have.

Dr Buteux

I hope I didn't give the wrong impression. The point I am making about the German position is that it is one that has been in evolution. The consensus has moved very considerably away from the direction of nuclear weapons and reflects very much more SPD thinking.

You mentioned collateral measures. The Germans have always been very concerned about those. Again, however, I would say that this new consensus reflects an altered balance between collateral measures and military — particularly nuclear — deployments. I don't know how you weight these things, but intuitively I would say that collateral measures have grown much more important in German thinking than military deployments.

Dr George Bell

I have two questions. The first is to Mr Lysyshyn, with regard to the non-proliferation régime. Could you go further on the subject of the relationship between the threat of proliferation versus the collapse of the treaty? In the discussion you referred to France, to Britain, and to China, but those threshold countries like Pakistan, India, Brazil, Argentina, Israel and South Africa were not mentioned. Is there any possibility, within the time frame of the current range of negotiations, that these countries would adhere? Or, what are the conditions that would preserve the treaty? Already it appears to have not been accepted by a very significant group of countries.

My second question is directed to Dr Buteux and to Mr Toogood. In the discussion of the short-range nuclear forces, none of you mentioned the quantitative relationship of the Soviet short-range forces: the ranges of their weapons, the numbers of warheads, and the inter-relationship of that to the conventional discussion. I sensed that in both cases you were willing to accept parallelism or combined discussion. Is that in fact a feasible and good strategy for the West to take when it would be important to seek positive reductions in conventional forces, and particularly in dual-capable weapons systems such as artillery, before one would subscribe to a zero option or a much reduced option on the part of the West?

Mr Lysyshyn

The likelihood of any current threshold states joining the NPT remains slim. The policy of India in its evolution has been interesting to watch. They used to tell us that if we had a CTB they would join. They now have a plan that says that unless we have a programme in place to eliminate nuclear weapons within a certain number of years, they will not join. There are, however, other ways of building a non-proliferation régime that are not quite as good as the NPT, but when you have most of the world within the NPT you can live with that. These are nuclear weapons free zones. We have one that takes into account Brazil and Argentina in the Southern Atlantic. Measures can be taken on a regional basis to create others that may well be helpful. There has been talk of one in the Middle East. Clearly not everybody is interested at this stage, but I don't rule it out for some time in the future. So you can build up the existing régime short of everybody signing on. I agree that for the immediate future, there is not much likelihood of these countries coming on. But that does not completely negate the importance and the value of the NPT. It has not been as successful as it could be, but with over 130 nations signed on it is significant and valuable, and one would hate to see it disappear in 1995.

Mr Toogood

The question concerns the distinctions on the one hand between nuclear artillery and SRNF, i.e. the Lance, and on the other hand, as a second question, the imbalance between East and West as far as quantity of weapons is concerned. I will deal with the latter first, and then set it aside.

The significant thing that has happened recently on the conventional arms control negotiation is that a terrible imbalance between weapons on an arms control negotiating agenda is no longer something we need to be fearful of. We have walked in and said, 'You have many more main battle tanks than we have and here's our proposal . . .' and the Soviets have said, 'We can probably work something out whereby we will both end up at the same lower level.' I think this is now a principle of any agreed agenda. So I am not worried about the comparative holdings of SRNF.

As far as the distinction between artillery versus the Lance, I sincerely believe what I said in my prepared statement — that if you go into any nuclear weapon, you have given up the prospect of victory in the classical sense. Therefore, even though the artillery and the Lance are strategically two very different weapons, artillery being a battlefield weapon whereas the Lance, especially the modernized extended Lance, approaches a strategic weapon, the use of either consists of stepping over that threshold with the resulting consequences. For that reason, I hold a zero option view, in conjunction with conventional arms control, providing that the remaining conventional forces are deployed in such a manner that deterrence continues.

Dr Buteux

I also do not think that the present disproportion in the size of forces is a barrier to negotiations. However, the disproportion is such that I suspect that the Soviets will hold out for the third zero as far as land-based missiles are concerned. That seems to me to make a lot more sense for the Soviets than saying that we will agree on 88 apiece, particularly if you allow modernization, because as I pointed out before, the net result would be an increase in the number of effective land-based missile warheads available to NATO. Why should the Soviets want that? After all, a 'denuclearized Europe' has been a long-standing Soviet policy option, one toward which I think they are moving forward very rapidly and successfully at the moment. I don't think the numbers are a problem. I think they will go for SNF because you can count them easily. You do not have the verification problems that you have with dual-capable systems. There is, of course, an additional bonus for the Soviets if they go for zero-zero. I cannot see any circumstances where the Germans would host nuclear artillery if the SNF go. So, from the Russian point of view, you kill two birds with one stone.

On the other hand, I think that NATO should go into the negotiations saying that we need *some*, and should try to negotiate that down to a very limited number with an option to modify. You may get a deal on that — I don't know and I suspect you won't — but it would certainly take the political pressure off for the time being.

On the conventional side, there are two things. One is the orthodox Anglo-American position that we cannot negotiate on short-range nuclear forces until we get a much more stable balance at the lower levels of forces at the negotiations in Vienna. Then we can move on and negotiate. I tried to suggest that this is not politically viable. But if we get into SNF negotiations, it seems to me to be possible to parallel the negotiations so that progress in one area is dependent upon what is happening in a second area. One notes that in the Vienna conventional negotiations, despite the mandate, the Soviets want aircraft and also ships to be factored in. Their overall strategic objectives are very clear; they are long-standing ones. Again, we are not talking about a man; we are talking about a system. What the man is selling are long-standing Soviet strategic objectives.

The Russians do not need nuclear weapons in Eastern Europe to serve their security needs. NATO has defined its security needs in such a way as it does need nuclear weapons in Western Europe, but the key actors say 'we don't want them anymore.' The Russians could put an awful lot on the bargaining table.

Mr Lysyshyn

On the SNF, you have clearly been reading what the Canadian government has said. We have not put out all the details. We think it is possible to negotiate at the same time on SNF and on conventional, and not get ourselves caught out badly, if at all. We also believe that it is possible to set a negotiating goal of not going to zero and maintaining it. The Canadian call has been that at this stage we begin *preparations* for negotiations, not to begin negotiations immediately — and that is intended to give us time to evaluate the conventional negotiations in Vienna — to see whether or not that maintains its current prospect of creating some kind of parity in the most dangerous systems. The Soviets have now agreed that the goal should be parity, and that changes the equation considerably. If progress continues, we feel that we should begin negotiations on SNF, although for now ruling out the zero.

Mark Stago

It seems to me that in the present state of East-West relations, *glasnost*, there are three possible interpretations. One is the wholly optimistic one — the Cold War is over and we should trust virtually everything that Gorbachev and his team are offering. Much of the media and a lot of the public in the West seems to accept this view. Another view is a totally paranoid interpretation; the entire thing is seen as a conspiracy, a deception from beginning to end. I find that view inconceivable, considering what has been given away, or at least put at risk, by Gorbachev internally and in the East bloc. It is no longer credible to see it as a total conspiracy.

In between, there is the mixed view — that a lot of what Mr Gorbachev is saying may be real, that there has been a sea change. This may be the much delayed Russian revolution that never happened in 1917, in which they move into the world of nations. But as Paul just said, the mechanism of state is still operating much as it has always done. So we should treat it as a very welcome development, but one which we have to treat very seriously. *Perestroika* is not very successful at the moment; it may not work. In three years time, their only way out may be to make, for instance, a grab for West Germany, to maintain the system for a few more years. I was therefore much heartened to hear from John Toogood that we are not going to just sit on our hands, which is what NATO has been doing for the last year or so, but to get involved with the whole process and test it.

I can tell you also with pleasure that this week in Prague an American non-governmental group is hosting a meeting with both government and non-government people. There is another one in Paris next week, and next month there is one sponsored by Canadians in which I am involved — all of these are meetings to encourage peaceful transition to democracy in Central and Eastern Europe. We need these things; we want to keep the momentum up.

At the same time, if the thing were to fall apart in two or three years — and I think we would be optimists without parachutes if we did not consider that possibility — and Gorbachev either turns into a hawk or is removed and replaced by a hawk, where would we be then? What we have heard today is a bit worrying. It would seem that their use of disarmament as a kind of extension of war (whereas for us it is an extension of diplomacy, first through the INF Treaty), has gained for them what they wanted when they were trying to stop us from deploying those missiles. West Germany is no longer willing to host nuclear weapons, or coming very close to that. If we went for a zero, the next step might easily be the reduction in conventional weapons — which again, everybody wants. What is the situation if there should be a return to a Cold War atmosphere in three years time, and we had reduced conventional weapons, backed up by a few not very effective nuclear weapons? As it is, the Germans insist on a forward defence because they see no point in building and committing large armies to the defence of their country if they are going to immediately withdraw to the Rhine — as NATO used to do in its training back in the 1950s. How could an army half that size, which is what NATO conventional armies might be in three years time, hold a conventional attack? The conventional attacker can always concentrate his limited forces in a way which the conventional defender cannot.

I am just throwing that in for comment, please.

Dr Buteux

If one looks at the evolution of Germany strategy particularly, and the evolution of East-West relations in Europe generally, I think one is seeing the emergence of what, in current international relations jargon, is called a security régime. If you listen to German spokesmen across the political spectrum, essentially they want to create a pan-European political system in which there are expectations of peaceful change.

Régimes are all very nice, but one of the things you have to worry about, particularly in security régimes, is the question: what are the consequences of defection on one side or the other of key actors from the régime? I suppose the answer is, it all depends . . . on who defects and the circumstances of the defection, and what sustains the régime. My own advice would be to make certain that the régime is based on effective military balances. In fact, a key component of expectations of peaceful change is a stable military balance, the kind of objectives that have been spelled out for NATO in the Vienna talks.

Another way to protect yourself against defection is to try to arrange your forces in such a way as to limit the possibilities of surprise attack and to limit the possibilities of success even if, nonetheless, a surprise attack takes place.

These ideas are being talked about in Germany a great deal, ideas ranging all the way from crazy notions about structural non-offensiveness through to ideas about what kind of military balance we should have — the kind of thing that NATO is thinking about in terms of the Vienna talks.

This is something that is not going to happen overnight, but I would say, in my more optimistic moments, it is not Gorbachev-dependent. I think we are seeing a bit of smoke and mirrors here. Gorbachev is attempting dramatic change in Soviet domestic affairs, in the economy and politics of the Soviet Union. I do not see Gorbachev breaking markedly in substance from what I believe to be long-term Soviet strategic and security objectives in Europe.

Mr Lysyshyn

One of the things that happens when you are dealing with East-West relations and arms control, as I have done through most of my career in External Affairs, is that you get paranoid. It is almost impossible to satisfy everybody when you respond to any initiative. There are those who tell us we should be totally optimistic and those who tell us we should be totally suspicious. In the end, governments generally come down somewhere in between. Clearly we have to find the right middle ground, and that is not an easy thing to do.

However, I think that there *are* prospects for arms control and arms limitation coming out of what we have seen. A number of people have commented that we can't just respond to Gorbachev; we must respond to the system. But the system is changing very radically. The worst case scenario has been discussed: in three years they are going to go back to what they were. I doubt that is possible, certainly not in East Europe. Take a look, for example, at what is going on in Hungary — the tearing down of the fence between Hungary and Austria. I just read a wonderful report about Hungarian television broadcasting an interview with Dubchek for two hours, ending with the promise to return to a continuation of the interview in two weeks. The Czech government protested strongly. In two weeks, the programme began with an announcement that the Czech government had protested, and then they proceeded to complete the interview. Clearly, things are changing. Poland is another example: the deal with Solidarity and what is happening there. On balance, this all offers us tremendous opportunities that we have to seize. Obviously, we do not forget prudence. But the opportunities are there because they cannot go back to where they were.

Mr. Toogood

There are two aspects to the comments. One is purely military: how could the conventional forces hold without being backed up by a nuclear capability? I think the secret is in the deployments, the ideal being (as I said) neither side having very good offensive capability and both sides have lots of great defensive capability.

It is interesting to note that although this is not on anybody's agenda yet, through the CSBM negotiations there is the necessity for a discussion of constraints, much as the West doesn't like it. Through the CFE there is the discussion of strengths. And through the Polish-German initiative (and here again we see the FRG) there will be comparisons of military doctrine. All of this is starting to form itself into a package of which we can begin to see the outline. That will appear sometime in the future — certainly not in three years.

What kind of a world would we have if Gorbachev falls? My colleagues have just about said it all. I would add just one thing, a reminder of Manfred Woerner's programme which would be to develop and expand the CSCE which is codeword talk, I suppose, for drawing them even more closely into the interdependence whereby they become reliant on Western economies, Western monetary systems, Western technology, so that the Finlandization of the Soviet Union continues. I agree with Mr Lysyshyn. I think they are already at a point where if Gorbachev disappears they cannot do an abrupt about-face.

Mrs Hoddinott

Thank you very much.

Ladies and gentlemen, as I predicted we have had a good discussion in this forum. The questions have ranged from direct and explicit to commentary. We have been reminded that uncertainty is ever present..

W. McC. RAE

THE FUTURE OF NUCLEAR DETERRENCE

George Bell

Ladies and gentlemen: Tonight we are privileged to have Air Commodore Rae. He has been with us all day and has listened to our deliberations. He is going to address us on the future of NATO and nuclear deterrence.

Our guest is the Chief of the Nuclear Weapons and Arms Control Branch of SHAPE Policy Division at the Headquarters of the Supreme Allied Powers in Europe in Casteau. He is a man of no small experience in nuclear issues.

Air Commodore Rae was born in India — which we recognize is now a nuclear power. He was raised in the area of Aberdeen, Scotland, and joined the RAF in 1958; as a navigator he served on tactical and strike aircraft. (Some of you are old enough to remember that there were things like V-bombers and other aircraft which were part of the nuclear deterrent, when Britain had Blue Streak missiles and other capabilities before the Poseidon.) He has also had great experience in flight training and radar schools. After commanding the 360th Electronic Warfare Squadron, he went to the Ministry of Defence where among other tasks he was the personal briefing staff of the Chief of Defence Staff during the Falklands War, and was responsible for the military aspects of theatre nuclear power. After commanding a major flying station, he went to the Royal College of Defence Studies, the British college similar to our National Defence College, the school upon which our National Defence College is based. In 1988 he took up his current posting in SHAPE.

I had the privilege of meeting his predecessor when we took the Business Council on National Issues to SHAPE and were given a very lucid presentation on the nuclear policies of the Alliance and of the Supreme Allied Command Headquarters. I am sure that Air Commodore Rae will enlighten us further on the types of issues we were discussing today, and bring us a clear statement of the position of the Supreme Allied Commander at this time when NATO is deliberating the future of our nuclear policies.

Air Commodore Rae

Ladies and gentlemen: I was very interested this morning when Dr Blema Steinberg made a reference to Thermopylae. I am not a classical scholar, but I remember that the sole chap who was left alive from the defeated side at Thermopylae rushed back to his king and said: 'I have to report a famous defeat,' and dropped dead. I also vaguely remember from my classical upbringing — I was Latin A Level failed — that the chap who won the race at Marathon rushed back and said to his master: 'I have to report a famous victory,' and dropped dead. I'm not sure what the moral to this story is. Maybe it is, don't rush anywhere to tell anyone anything, especially in the light of what has been happening in Europe these last few days on the issues that we have been discussing today.

To round off today's symposium, I have been asked to look at the future of nuclear deterrence. This subject has always been of interest to the defence sector but in terms of political and public vogue, it has had its ups and downs. I don't have to tell you that it is a rather popular theme for discussion in Europe today, and this leads me to say that our publics must be exposed to the arguments on this and other nuclear matters if the public debate is to be rational.

Where do we start? One can rarely look into the future without first looking at the past. So, if you will forgive me, as a starting point I will cover NATO's history briefly with respect to nuclear deterrence and the strategy we now employ.

NATO Nuclear Policy

In the 1950s, NATO, from a position of nuclear weapon dominance, was beginning to think through the enormous change in the definition of war following the use of the atomic bombs in 1945. At the same time the Soviet Union was expanding its boundaries by the use of force in its attempts to realize its ideological aims. The threat was very real: nations still had ministries of war not, as now, defence. But as time went on the credibility of the trip-wire strategy became weaker with, amongst other things, the Soviet achievement of nuclear parity.

Soviet expansionism, certainly in Europe, was being replaced by peaceful co-existence. A rethink in policy and strategy was necessary and wanted by the NATO nations. It resulted in the adoption of a strategy of flexible response and forward defence. This seeks above all to deter war, to counter any possible attack ranging from minor incursions to all-out nuclear war. This strategy relies on the ability to threaten the aggressor's homeland, and has the strength to make him realize that the losses he would sustain would far outweigh any potential gains. NATO's strategy poses a range of responses to military aggression: direct defence, deliberate escalation, and finally general nuclear response, the ultimate guarantor of Alliance deterrence. Conventional, theatre nuclear forces (TNF) and strategic nuclear forces allow us to fulfill this range of responses. We need all three to make our strategy what it is: flexible.

Here I must touch on a sensitivity. People do not seem to find it difficult to associate with conventional weapons and with strategic nuclear weapons. Many tend to see them as two discrete methods of deterrence, which they are not. Deterrence needs both. However, if the use of strategic nuclear forces is the only response to conventional attack, it will not be credible. Similarly no amount of conventional force alone can be sure of keeping us safe if a nuclear power is trying to impose its will on us. Theatre nuclear forces form the overlapping link between these two and that is why the importance of TNW cannot be overstated.

It is important to remember also that NATO's strategy is to deter and it is defensive in design and nature. The problems of escalation control are as real as they are unpredictable and that is why nuclear weapons and the use of nuclear weapons by NATO to restore deterrence are under strict political control. So the essence of the strategy is that it is flexible (and therefore unpredictable), it has a demonstrable military capability and readiness backed by a strong political will. What is more it is a strategy that was reaffirmed at the NATO Summit a year ago. So far it has been remarkably successful. We cannot scientifically prove that the reason for peace in Europe for the past 40 years was because of the existence of nuclear weapons, but equally we cannot disprove it. Having said this the strategy will continue, correctly, to be scrutinized. So let me move now to two current issues on our route to the future.

Current Climate

Four years ago along came Mr Gorbachev. After an extended period of not doing very much he has suddenly taken Western European public opinion, and a few political leaders, by storm. The more people see of him, the more they are reassured. There has never been a leader from the Soviet Union like him. He is willing (or so it appears) to listen to the other person's point of view. He has a sense of humour. He talks of peace and prosperity. The more he calls for reform at home and international co-operation abroad, the more his popularity climbs. His theme on arms reductions catches attention: reduce asymmetries in the conventional balance, restructure Soviet forces to a more obvious defensive footing, cut back on the size of the forces, and statements of unilateral reductions. The INF Treaty and offers to reduce short range nuclear forces by negotiation to zero has added to people's expectations for a move in our strategy away from nuclear weapons. In sum, has the threat really gone away?

The Threat

No one at SHAPE has difficulty in conceding that changes are afoot in East-West relations. The Soviet Union is in some kind of transition, and it appears to be irreversible. But even if fundamental changes are taking place in the Soviet system, the direction and outcome of the changes remains obscure and the time-span incalculable. The threat is not from Soviet ideology or from the economy — it is from the Soviet military. The iron on the battlefield is still out there if you go and count it. By any yardstick the Soviets possess a big ground-gaining machine. The WP has 59 000 tanks compared to NATO's 22 500 in Europe. We have proposed gradual cuts to 20 000 apiece but Moscow has not replied formally. Instead, Moscow has earned plaudits from the West for its offer to remove 10 000 tanks over the next two years whilst its tank production will turn out around 7000 new ones over the same period, and production shows no sign of slowing down.

Setting aside the folly of pinning Western foreign and defence policies on the fate of one man, whatever the team in power in the Soviet Union and whatever its intentions, we will need credible defence strategy which leaves no prospect for military adventurism.

The Future

So where do we go from here? I have implied that there are inherent dangers of instability as the Soviets travel down their present path, hopefully towards something better. Our response to that is clear. We should be as stable and predictable as possible; we should do nothing that could sacrifice our security.

Our policy of 'peace through strength' has been instrumental in producing better relations with the Soviet Union and will most likely play a critical role in shaping future Soviet actions. Would it make sense to abandon this policy just as it is bearing fruit? I don't think it would.

Deterrence is still our paramount aim for the future, for we need to prevent all wars between the power blocs. Can it be done without nuclear weapons, not least theatre nuclear weapons? I think not. The system of deterrence centred on nuclear weapons may not be a likeable thing but it is in essence a system for helping to cope with a hard world in which two realities have to be reconciled: that sources of deep conflict exist; that alongside those sources there also exist the means of conducting conflict in intolerably destructive ways. For all its imperfections, no safer system is within our reach, and we should not choose to gamble by discarding this one.

Having argued that the current strategy is still valid, should we seek to alter the role of nuclear weapons within the strategy? A return to early-first-use or trip-wire is not a realistic option. The Alliance refuses to accept a situation in which the only choices open to it are capitulation or mutual destruction.

What about the opposite notion: abandon the option of first-use of nuclear weapons? In reality, a no-first-use policy would increase, not decrease, the likelihood of both conventional and nuclear use. It would remove the key source of NATO's deterrence — the threat of possible nuclear retaliation in response to any kind of aggression. The possibility of nuclear first use deters war primarily because a potential aggressor who knows he possesses overwhelming conventional strength can never be sure when or how the Alliance will respond effectively to aggression. Such uncertainty of response is the central factor in NATO's deterrent equation.

I would now like to focus on TNF for the remainder of my talk as the strategy hinges on this central element. TNF has two primary sets of characteristics: political participation and military capability. And they illustrate two fundamental purposes: first, to make credible the ultimate massive use of nuclear weapons by presenting a more limited, restrained and usable threat. The second is to give an Alliance identity to a United States nuclear capability, and thus give credibility to the concept of extended deterrence.

The first case gives the basis for selective employment. That is, any use must be deliberately constrained and measured. The aim is *not* to inflict military defeat but to induce a political decision to cease aggression and withdraw. Such use must be precise and effective, but demonstrate restraint in numbers, types of weapon and nature of target. It must demonstrate resolve but not indicate the wish or intention to engage in nuclear warfighting. It must present a spectrum of capability denying any perception of weakness or limitation that could encourage the Soviet Union to calculate the risk.

The military criteria for such TNF are and will be demanding. The range must be sufficient to embrace all of the Warsaw Pact including the Soviet Union. There should be a diversity of systems to complicate WP defences. These systems must be survivable and give a high assurance of penetrating to the target. They must be accurate and possess a spectrum of yields to ensure effective strike on any target without undue collateral damage. They must be produced in sufficient numbers, be widely deployed, and be sufficiently visible to achieve deterrent effect.

Political participation will be equally vital in the future, for a strong Alliance identity is essential for deterrence. European nations will therefore need to continue as they do now to provide nuclear delivery systems, and widespread basing for United States weapons. Cohesion will also be identified by Alliance-wide participation in crisis consultation, and in the formulation of NATO nuclear policy through ministerial bodies like the Nuclear Planning Group.

Modernization

Nuclear policy and its implications cannot be considered to be static or uneventful. Nuclear weapons do not remain effective forever, and in the course of ageing they suffer from technological shortcomings which will make them unreliable. Trying to extend their service beyond that time would normally be prohibitively expensive and technologically infeasible.

This is happening to NATO's nuclear forces, and NATO is dealing with the problem of modernization now. The Foreign Secretary of the United Kingdom put it this way: 'If we allow our defences to become obsolete or to wither away, if we allow the denuclearization of Europe, if we allow Europe and North America to be decoupled, we would leave the Soviet Union in a position which we should be naive to expect it not to exploit, if only politically.'

The Soviet Union has entered the Western public dialogue by saying it 'cannot agree that countermeasures will not be undertaken in modernization of our own short-range systems' if NATO agrees to update its short-range nuclear forces. This is the same threatening approach the Soviets took when NATO deployed Pershing 2 and GLCM. In the present case, it is hard to comprehend how they can threaten to *begin* doing something (modernization) which they have already been doing.

The Soviets have been aggressively pursuing a number of short-range nuclear force modernization programmes during the 1980s, including missile and artillery systems. The full range of WP SNF modernization carried out thus far allows the Pact to field a modern, highly effective SNF arsenal directly opposite NATO. In summary, the Soviets have shown no sign of having abandoned their decade-long modernization programme for their SNF or their overall theatre nuclear posture.

While the nations of the WP were busy increasing their short-range nuclear capabilities, what was the Alliance doing? Between 1979 and 1988, it was unilaterally removing about 2400 nuclear warheads — fully a third of our stockpile, resulting in the lowest number of warheads in Europe in 20 years.

NATO continues to strive to provide for the security of its members at the minimum level of forces. SACEUR believes we could make further reductions in the stockpile, especially in artillery rounds, without risking our security if we get the improved survivability, reliability, accuracy and range that come with more modern systems. These modern systems are anchored to missile replacements for Lance and for free-fall bombs, and they provide important advantages over existing systems that could lead to enhanced deterrence in the 1990s. Not least, I would have to say that NATO, for the first time, has the opportunity to get away from the over-reliance that it has had on dual-capable aircraft all these years. It is worth reaffirming that the proposals currently before ministers in no way contravene the spirit or the letter of the INF Treaty. In view of recent political events, uncertainty exists over the precise timetable leading to modernization, but when decisions are finally made, the decisions will be taken jointly by NATO nations.

Against this background, the Soviet Union has seized the initiative by proposing arms control talks with the West that could lead to the elimination of short-range nuclear forces. This has made a strong impact on some Western countries, who have signalled their intention to pursue a dual approach in their security policy, with the aim of achieving equal SNF ceilings at substantially lower levels and artillery at drastically lower levels.

It seems to me right to resist commitment to Mr Gorbachev's aim of a denuclearized Europe, for it is a concept that makes for muddled thinking. So long as Russia has conventional preponderance we cannot diminish the nuclear protection that has kept us free. Moreover, looking further ahead, the probable existence of nuclear weapons elsewhere in the world will make it impossible for either side of Europe to dispense with them. In this sense, Mr Gorbachev's aim of denuclearization is romantic.

But all that is no reason for not working beneath the NATO nuclear umbrella towards diminishing the level of tactical nuclear weapons by reference to the implementation of agreements arising from the negotiations for conventional disarmament and for elimination of chemical weapons.

In conclusion, the Alliance was designed to prevent war; there has been no war between East and West. NATO, through political will-power and nuclear weapons, has kept the peace, and can continue to do so in the future by keeping intact its flexible response strategy through modernization, even if negotiations lead to major arms cuts in the coming years.

Finally, the problem for the future seems to centre on the fact that high opinion polls for NATO co-exist with unmistakable evidence that fewer people are willing to pay the price which nuclear deterrence requires. In Europe that can express itself as the self-deception that deterrence is no longer appropriate or necessary. In the light of this, NATO has to find a way of rededicating public support for military security to protect democratic values. The publics of the NATO allies have to be convinced of the necessary connection between the ends and means in nuclear deterrence, which remains the best guarantee of collective security and the avoidance of war.

Mr Brian MacDonald

Yesterday I was speaking with a friend at Harvard University who reported to me an article which appeared in the Boston *Globe* — and I emphasize I have not seen it directly so my reference to it is on the basis of hearsay — which described a proposal that the United States Navy remove the entirety of its surface nuclear capability. It would retain the capability in the SSBNs. This was on the advice of Paul Nitze at one stage. This would remove any inventory of land-attack nuclear-tipped cruise missiles as a case in point.

What would be the impact with respect to the Alliance in the European theatre of a decision of the United States Navy of this nature?

A/C Rae

The first thing I would have to say is that I have not heard of this proposal, and I would be very surprised if it were implemented. Having said that, the Alliance at this stage places very little reliance on sea-launched cruise missiles. The impact of it on the current status of the nuclear forces in the Alliance would be negligible.

General Colin Curleigh

You mentioned NATO getting away from reliance on dual-capable systems, particularly aircraft. Could you elaborate on that?

A/C Rae

Yes. One of the problems throughout the history of the nuclear structure of the Alliance is that up till now it has had to task its aircraft at extremely heavy rates. The proposal that is in front of ministers gives them an opportunity to task aircraft at a much lower rate, and the implication of that is, of course, that you no longer need to take aircraft out and preserve them for the nuclear role at the most crucial stage of the conventional phase of the war when you most need them for that.

General Curleigh

I can remember that myself from when I was in Europe. But what has changed now? If it doesn't make sense now, why did it make sense ten years ago?

A/C Rae

They had very little option in the past to do otherwise. It is now possible because of the extended range of the new follow-on to Lance, and that gives an opportunity to remove aircraft from certain targeting capabilities which up to now have been solely aircraft preserve. Up to now aircraft have had to attack targets that are fairly close to the front.

Unidentified

I would be grateful for whatever briefing you could give us on what is happening on the idea of a comprehensive arms control overture.

A/C Rae

I would very much like to answer that, but the fact is that it is not a military business; it is very much a political one. I would have to say that the most important decisions on that are yet to come with the Summit at the end of May.

Unidentified

Recently, in another forum, our Canadian intelligence people briefed a number of academics to the effect that if the Soviets complete all of the initiatives that Gorbachev has talked about — the reduction in tanks, and so on — we would still wind up with a ratio of Warsaw Pact forces to NATO forces of tanks of 2.33 to 1, artillery 2.32 to 1, and tactical air of 1.98 to 1. They are still, as you indicated, producing something in the order of 3500 tanks a year in four tank plants, and they are producing eight or nine nuclear-powered submarines a year, just to cite some of the major systems.

From a Western perspective, that is rather frightening. Mention was made today in several of the presentations of the Russian perspective of the West's capabilities. Is reduction to those ratios, in their perception, down to the minimum they require for defence, or are they still, in your perspective, maintaining an offensive capability that would allow them to take offensive action?

A/C Rae

My response to that is that they have published their figures and we have published ours. The proposals of the West are in front of them in the CFE talks. They have proclaimed that there are asymmetries and that they have to come down. The talks are going on at the moment. To give a personal view, I don't think there will be absolutely clear indications for some months of Soviet intentions with respect to the talks. But Mr Gorbachev has made, I believe, it sufficiently clear that the Soviets have to come down to some form of initial parity. I am not saying that the proposals in front of the East in the current CFE talks are the end of the road. You have to start somewhere. The current proposals for the West go down to about 90 per cent and that may not be the end. From our viewpoint, the most meaningful thing is *when* they actually withdraw their forces and this becomes very critical when you look at the SNF reductions, if you tie those into arms control talks. If the Soviets are really serious, they will have widespread removal of their forces from Warsaw Pact countries and will do it quickly. If they don't, then one begins to question what their real motives are.

Mr John Thompson

Just a point regarding the reduction of their forces. They have announced that they are going to provide a unilateral cut of 10 per cent in their tank divisions, 20 per cent in their motor rifle divisions, but at the same time, which nobody in the Western media has picked up, they are reorganizing their armed forces from a front army division regimen to a front corps brigade structure, which is more flexible and represents a quantitative reduction while losing nothing to quality or combat effectiveness. When you were talking about their reducing their forces, were you talking about reductions in excess of what they unilaterally pledged, which is really part of this reorganization?

A/C Rae

What is on the table in Vienna are very much more major reductions than what they have offered. On your point, I think it is a very important factor that if they reshape the operational structure of their forces, you could find that they are more efficient with a lot less.

General Curleigh

A follow-up question to a comment you made earlier about the withdrawal of iron from the battlefield. From SACEUR's point of view, is that enough? With their lines of communication, they could redeploy rather more quickly than NATO. It would have to be more than that.

A/C Rae

That's right. The most critical factors are to prevent surprise attack and to prevent any chance of overwhelming attack. That is not simply a question of bean counting. Obviously you have to take that into consideration, but factors like forward deployment and storage of ammunition, the ability to mobilize and redeploy, and so on are more important. All this is being worked on. One speaker earlier today implied that the West is not very good at confidence- and security-building measures. But from my viewpoint, as head of the Arms Controls Policy Section at SHAPE, I know that there is a lot of work going on in that respect.

Unidentified

Ten or fifteen years ago we always talked about 'NBC' — nuclear, biological and chemical warfare. Does biological warfare enter into any of these discussions? Is it still a factor?

A/C Rae

It is a factor in our thinking. It is a very sensitive subject, and it is not something that one likes to talk about very much in the public domain. But I don't think anyone here would question the existence of chemical and biological agents. You cannot bury your head in the sand and pretend that they don't exist. At the moment, what is the deterrent to them? We have heard that in the one country where they are stockpiled at the moment, they have agreed with the United States to remove them in the not too distant future. If there is widespread use, one has to consider nuclear retaliation. It is not the most satisfactory arrangement. The wide expectation from the recent Paris agreements on chemical weapons is that all will be right in the near future, especially as the Soviets have said that they are prepared to remove them. But actually, the business of destroying chemical weapons is quite a lengthy process. Also, as you probably know, we are in substantial argument with them because there is a difference of the order of many magnitudes about what they claim to have and what we think they have. It is a difficult question which, as you can gather, I don't particularly wish to get into at the moment.

Unidentified

Earlier in your remarks, you referred to peace through strength as well as through negotiations. In this country we are not accustomed to thinking of having much strength — especially since last week! Bearing in mind some words that Lord Carrington used several years ago, to the effect that the way to avoid a Third World War is by having the means of defending ourselves and the resolution to do so, would you amend your words to mean that it was resolution that brought us this way, or would you defend the use of the word 'strength.'

A/C Rae

Strength in one sense is exemplified by a level of forces and by the ability to use them effectively. Linked to that is inevitably the political will to make the whole package effective. I don't mean by that any criticism of the Canadian government. It is a flat and neutral statement.

General Bell

Air Commodore Rae, we appreciate very much the clear and lucid presentation you have made of SHAPE's and NATO's policy and also your frankness in answering the questions. I am sure there were occasions today when you would have liked to have challenged the other speakers, but tonight in your presentation you have had a chance for some rebuttal in areas which, I am sure, you did not agree with.

On behalf of all here, and on behalf of the Institute, we appreciate very much that you have taken the time out of what is a very busy schedule at a very important time to come here. We want to thank you, and also General Galvin for ensuring your availability to us on this important occasion from our point of view. When he was here last May, he was also very articulate in terms of the policies of the Alliance, and at that time he promised he would support us in our efforts to bring people from the Alliance to talk directly to our members.

GEORGE BELL

SUMMATION

Ladies and gentlemen: I would like to remind you that it was ten years ago that we held our conference on NATO at 30 years, and now we are dealing with the subject of NATO at 40 years. In this community alone I know there are three or four seminars dealing with various dimensions of NATO over the next two weeks, and others which will take place in June in Kingston, and elsewhere. There will be considerable hashing and rehashing of the kind of information that we have been discussing. It is very difficult for us in Canada, having worked through the past 20 years to get a defence policy, to find ourselves in a position where that policy is in shreds through budgetary constraints. We will have to work on it again for the next 15 years to try to get it back in shape!

This morning, Dr Blema Steinberg gave us an overview of the evolution of deterrence and brought with her an academic concept of the idea of 'strategic reassurance.' This evoked from you a discussion on aspects of deception, matters of trust and provocation, and the subject of capabilities versus intentions. The question period raised aspects of historical perception. Quite clearly, we are in a period where the relationships of the political, military and economic dimensions will be of increasing importance. Bringing all three together effectively will be an important aspect of our national and international security system.

Dr. James Finan, with a good technical presentation, pointed out to us the importance of contemporary deterrence in the ordering of international security, and indicated to us that we are dealing with a reactive strategy which is based on the characteristic of unacceptable damage, and not with a proactive strategy. He stressed the importance of having technical credibility, that is, weapons systems that are seen to work and that would work if used. Therefore, concepts of modernization are important as we maintain the deterrent capability while adjusting to the total risk in terms of the systems that threaten us.

This, of course, brings us to the point of having the political capability to carry out such negotiations effectively and also to be seen by any potential enemy as having the will to make the necessary decisions and to apply our deterrence and defence strategies.

Dr George Lindsey, as ever, gave us a clear lucid *tour d'horizon* of strategic defence in terms of the SDI and the parallel Soviet system, and the related aspects of aerospace defence, particularly the Air Defence Initiative. He related those to the strategic aspects of maritime defence in terms of anti-submarine warfare. He clearly identified for us the importance and the priority for the development of more effective surveillance and early warning systems, with emphasis on space-based systems and sub-surface systems. He stressed the need for us to consider how we would defend against the cruise missile in terms of active defences, and what might be ahead for us in Canada in dealing with the mid-course land-based ABM defence against the intercontinental and submarine-launched ballistic missile.

We had a very stimulating panel this afternoon. Mr Ralph Lysyshyn raised with us the importance of the Non-Proliferation Treaty and the inter-relationship of that to the arms control régime, having in mind that the arms control régime is part of our deterrence and defence concept. The preservation of that, and the watchfulness in dealing with that, the importance of NATO and the Warsaw Pact moving the yardstick in arms control without increasing the risks, are essential to ensure that the rest of the world do not find themselves having the same kinds of risks that we have experienced in Europe for many years.

Dr Paul Buteux added to our knowledge of what is currently going on within the Alliance and the tensions there. He pointed out to us very clearly some of the impacts on the strategic doctrine of the Alliance of the INF Treaty and the current aspects of the negotiation which are taking place between the two alliances. I would perhaps disagree with both him and Mr Toogood on the importance of the sequence of negotiation in the relationship of conventional arms talks and to the nuclear reduction talks. I think that one of the key aspects of this is to make sure that declaratory statements are not the basis for decision. The results that those declaratory statements can bring should be achieved in agreement before, as people have said, you throw the baby out with the bath water.

I am concerned that when we discuss modernization and alternative systems we do not focus sufficiently on the fact that German political parties do not want to see nuclear weapons capabilities within the Alliance done away with; they merely want them located in somebody else's territory — at sea, or in other areas where there are air bases. I think there is more than one key actor to be considered. The initiatives of Prime Minister Thatcher can be understood when you consider where the deployments might be to provide the deterrent capability that is needed to deter any aggression from the other side. We have to look at the fact that we don't want any of these weapons to go off, but if they do go off, they are going to go off all over the place in Europe, and whether they are launched at sea or in the air, they will land on the territory where the aggression is taking place.

Mr John Toogood brought up the question of whether we can move down the scale to achieve greater dependence on improved conventional defences while limiting the size of conventional defences through the application of effective negotiations. Can we build on the expectations that the declaratory statements that have been made can be successfully turned into real agreements? I was pleased to note that he stresses the importance of the Alliance maintaining effective strength as it reduces, so that the initiatives of the NATO Secretary-General can be seen as a set of positive initiatives which the political and economic elements of the Alliance can take while being backed effectively by a solid defence. There was nothing in his approach to suggest that the need for the military dimension of the Alliance had diminished. In fact, he stressed the fact that it was much required.

Air Commodore Rae brought us a message of importance for this particular time. It allows us to understand better the kind of debate that is going on in the Alliance. The Alliance has been through many crises. We trust that crisis management will take over and that we will come out of the Summit with a rational and coherent policy and a comprehensive consensus that will allow us to move forward and take advantage of the negotiations which are before us, without losing the opportunities we have and without risking the security of NATO and the whole North Atlantic area.

I think we have had a very good seminar today. The exchange of views expressed here today is very important to the understanding of what is going on within the Alliance, and particularly to a need for an understanding in Canada of these critical issues. There is not enough detail in the coverage of these subjects in our press or in our other media to ensure an informed public.

I want to thank the speakers for their presentations. The quality of the presentations has been high. I want to thank the moderators for their participation, our staff and our past and current executive directors for putting the seminar together. Most of all, thank you all for being here and actively participating in the discussions. It makes the proceedings much more meaningful.

Ladies and Gentlemen, before adjourning this meeting I would like to recognize the presence of Brian MacDonald, our outgoing executive director, who has helped steer us through the last six or seven years of our activities, and who, along with his staff, was responsible for putting together today's seminar.

We will be having a formal occasion on June 14 to say farewell to Brian and to recognize appropriately the contribution that he has made to the Institute. I look forward to his continued participation in helping us to strengthen this Institute and strengthen the advocacy of an effective national security policy in Canada. Thank you very much, Brian.

I would also like to welcome formally to Toronto Alex Morrison, our incoming executive director, and his wife, who are with us tonight. We look forward to your participation and to the formal welcome on June 14 when Alex will have thrown off the mantle of Minister-Counsellor at the Permanent Mission of Canada to the United Nations in New York and have become our executive director in Toronto. Thank you for being here with us at this seminar.

Ladies and gentlemen, thank you for making this a successful seminar. We hope to see you again in the autumn when we will be dealing with future strategies for Canada at our seminar entitled 'Canadian Strategic Forecast 1990.' In the meantime, if you have any effective comment to give to the government on the inadequacy of its budget for defence, please ensure that they understand that there is an important part for Canada to play in the Alliance and that our credibility is at risk. Therefore, it is time we looked very carefully at what we are doing.

Thank you for being here. I declare this seminar adjourned.

GLOSSARY

ABM	Anti-Ballistic Missile
ADI	Air Defence Initiative
ALCM	Air-Launched Cruise Missile
ATBM	Anti-Tactical Ballistic Missile
AWACS	Airborne Warning and Control System
BMD	Ballistic Missile Defence
BMEWS	Ballistic Missile Early Warning System
CFE	Conventional Forces Europe
CSBM	Confidence- and Security-Building Measures
CSCE	Committee on Security and Co-operation in Europe
CSU	Christian Social Union
CTB	Comprehensive Test Ban
DEW	Distant Early Warning
FRG	Federal Republic of Germany
GDR	German Democratic Republic
GIUK	Greenland-Iceland-United Kingdom
GLCM	Ground-Launched Cruise Missile
ICBM	Intercontinental Ballistic Missile
INF	Intermediate-Range Nuclear Forces
IR	Infrared
IRBM	Intermediate Range Ballistic Missile
LRINF	Longer-Range Intermediate-Range Nuclear Forces
MRBM	Medium Range Ballistic Missile
NATO	North Atlantic Treaty Organization
NGO	Non-Governmental Organization
NNWS	Non-Nuclear Weapons State
NORAD	North American Air Defence
NPG	Nuclear Planning Group
NPT	Non-Proliferation Treaty
NTM	National Technical Means
NWS	Nuclear Weapons State
OAS	Organization of American States
PLO	Palestine Liberation Organization

Partial Test Ban Treaty	PTBP
Re-entry Vehicle	RV
Supreme Allied Command Europe	SACEUR
Strategic Arms Limitation Treaty	SALT
Surface-to-Air Missile	SAM
Strategic Defence Initiative	SDI
Supreme Headquarters Allied Powers Europe	SHAPE
Submarine-Launched Ballistic Missile	SLBM
Sea Lines of Communication	SLOC
Short-Range Nuclear Forces	SNF
Sound Surveillance System	SOSUS
Social Democratic Party	SPD
Ballistic Missile Submarine, Nuclear-Powered	SSBN
Cruise Missile Submarine, Nuclear-Powered	SSGN
Nuclear-Powered Submarine	SSN
Strategic Arms Reduction Talks	START
Theatre Nuclear Forces	TNF
Theatre Nuclear Weapons	TNW
Warsaw Pact	WP

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